The Perceived Attributes and Role of Environment to Creative Instruction

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Abstract

Creativity is an exciting area of research in education because it is increasingly understood to benefit learners. Creative teaching is effective teaching that enhances learning (Sawyer, 2011; Reilly et al., 2011; Rinkevich, 2011) and promotes creativity among learners (Nickerson, 2010; Horng et al., 2005). Understanding the effect of context on teachers is essential.

Contemporary research makes it difficult to determine how important the environment is to creative instruction. The environmental contexts concerning instructional creativity are not entirely understood. This dissertation asks: What aspects of the environment relate to instructional creativity? This study approached answering this question in three ways. First, by analyzing related literature. Second, by conducting an investigation that defines the key attributes of the environment. And third, by conducting an investigation that delineates the role of those attributes in mediating instructional creativity.

The constructs of the Four-P Model of Creativity (Rhodes, 1987) were used as an exploratory beginning to answer the research questions, namely in guiding the review of literature. Rhode's model was selected because it is widely used to understand creativity in non-educational work environments where creative performance and outcomes are desired. While the Four-P Model is popular in creativity research, it has not been extensively utilized to delineate the contexts of creative instruction. Rhode's model defines four creative dimensions known as the Four-Ps: person, process, product, and press (environment, place). This study used these dimensions to systematically review available literature related to creative instruction, and as a method to reveal and confirm the gaps in knowledge.

The literature review established that the Four-Ps of instructional creativity have not been fully investigated. The attributes and role of the environment to creativity in instruction are the least understood and defined. The results of the systematic review were compiled as a conceptual framework based on the existing knowledge. The systematic review and resulting conceptual framework guided a design for discovery that is unique to this domain of research. The uniqueness of the research design is three-fold. First, it puts teachers at the center to learn about instructional creativity: measurably creative teachers are the unit of study. Second, it embraces the existing knowledge that creative teaching benefits the learners. Thus, learners are not included in this

investigation. Third, it accepts the assumption that pupils and professionals have a different relationship with the educational environment.

The mixed-method approach was implemented in two phases to enhance discovery. For the first phase, creative instructors were selected by using the Abbreviated Torrance Test for Adults to determine their Creative Index or CI (Goff, 2002). Nine participants with a “high” or “substantial” CI (> 5 CI on a scale of 1 to 7) were identified among the 18 phase-one participants. Three were selected for a pre-dissertation pilot study to test the qualitative methodology for phase two. Six were selected to participate in the second phase of the formal study.

Two semi-structured, responsive interviewing techniques were implemented. Participants were first interviewed in their teaching space, followed immediately by a participant-led, walking interview through the building. The walking interview was designed to utilize the environment as a rich data gathering method. This encouraged participants to share experiences and perceptions about the environment, and to promote the generation of descriptive data. The data was interpreted, coded and analyzed to identify aspects of the environment that they perceive as important to creative instruction.

The knowledge that emerged from this study represents the insight of creative teachers who shared personal experiences of feeling creatively enabled or limited. The discoveries are organized within three major findings. The first is multifaceted; defining the attributes and role of the environment that emerge as important to creative instruction. The second demonstrates that the attributes of the environment that relate to creative instruction are interrelated. The third indicates that the organizational environment is dominant and negotiates instructionally creative behavior.

This investigation did not evaluate a causal relationship between the environment and instructional creativity. It was not an exploration of educational or developmental psychology. Rather, this work synthesizes the experiences of creative instructions to broaden knowledge about instructional creativity as a system in which the environment plays a distinct role. This work makes important contributions of knowledge to creativity as a field, to education where creative praxis is essential, and defines entry points for future investigations. The longitudinal goal of this work is to gain knowledge about how environment enables instructional creativity for all teachers. This information is relevant to anyone invested in optimizing the place and practice of creative instruction.

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Chapter I: Introduction

Introduction to the Problem

Creativity is an exciting area of research in education because it is increasingly understood to benefit learners. Instructional creativity is linked to effective teaching that enhances learning (Sawyer, 2011; Reilly et al., 2011; Rinkevich, 2011). Research indicates that when instructors model creative thinking, it promotes divergent thinking among learners (Nickerson, 2010; Horng et al., 2005). Instructional creativity is also identified as an important component of teaching and nurturing student creativity (Grainger, Barnes & Scoffham, 2004; Beghetto & Kaufman, 2010; Cheng et al., 2010; Sternberg, 2015).

While discoveries about creativity and learning are expansive, "research studying everyday creativity in teachers is sparse." (Lilly & Bramwell-Rejskind, 2003, p. 4). The studies that do aim to expand this knowledge are substantiated by learner outcomes and perspectives, struggle to separate students from teacher, or lack representation of the teacher. The National Advisory Committee on Creative and Cultural Education suggests that creativity research in education has suffered from the failure to distinguish creative instruction from teaching *for* creativity (1999). Henriksen & Mishra (2015) attribute the lack of research concerning the creativity of individual instructors to the nature of existing research in the field. Kalin (2016) attributes the gap to a deeper issue that relates to the structure of today's educational system. Kalin summarizes, "Even though employers claim to desire flexibility and creativity in their future workforce, these characteristics are largely alien to the standardized contexts of schooling that devalue the teacher's creative engagement with students, sites, and knowledge." (p. 9). The gap may also relate to the methods employed to gain understanding, the stigma of research that deemphasizes the learner, and current directions of curriculum that shape the focus of scholarship.

This dissertation does not aim to know why we lack knowledge about creative instruction. Rather, the goal of this work is to address the deficiencies in knowledge concerning creativity and the instructional environment. We know that creative instruction benefits learners. But, what contexts relate to instructional creativity in the first place? What is the role of the environment? How does the environment enable or limit creative instruction? Contemporary research makes it difficult to answer these questions. Beghetto describes the general lack of knowledge concerning the instructional environment a "pitfall" of creativity research in education. (2007, p. 102).

These are open scientific questions that this research is designed to address. This dissertation focuses these questions into a unique study about instructional creativity.

Research Question

Contemporary research does not identify the contextual elements of the environment that relate to instructional creativity. More investigations are required to improve our understanding about how environment enables instructional creativity. This dissertation asks: What aspects of the environment relate to instructional creativity? This study aims answer this question in three ways:

1. Analyzing related literature.
2. Conducting an investigation that defines key attributes of the environment.
3. Conducting an investigation that delineates the role of those attributes in mediating instructional creativity.

Significance of the Study

Contemporary research makes it difficult to determine how important the environment is to creative instruction. The literature presented in Chapter 2 establishes the breadth of understanding concerning instructional creativity and reveals the gaps. It demonstrates that our knowledge about the "relationship between creativity, interaction and space requirements" needs further investigation." (Sailer, 2011, p. 6). The review also demonstrates that our knowledge about creative instruction is lacking. However, evidence of how context of environment relates to *creative instruction* is particularly deficient. The contexts that enable instructional creativity are important to discover because they might represent a fundamental aspect of effective instruction that is currently overlooked in funding and designing learning environments.

Most of our understanding about the creative landscape of schools is derived from research that examines learner outcomes and perspectives. The studies that exclusively concern teachers are few, and ineffectively define multiple dimensions of the environment. Chapter 2 presents only five known studies that concern some degree of the environment and instructor creativity. The research on this topic is incomplete. The deficiency "raises awareness of how classroom design encourages or inhibits teachers' choices and abilities to utilize a variety of pedagogies." (Ford, 2016, p. 25).

Martin (2002) found that the physical environment can either disrupt or support a teacher as they perform their job. Perceived controllability of the physical environment and classroom surroundings have an especially strong impact on a teacher's behavior. Basom & Frase (2004) found that creative instructional environments are defined by

those with administrative support because they stimulate flow experiences (Csikszentmihalyi, 1996), and impact teacher efficacy. Cheung (2012) compiled evidence that when an instructor is able to autonomously manipulate or utilize their environment in a creative way, it often does not happen. Rubenstein, McCoach & Siegle (2013) suggest that the instructional environment can be a hindrance to creativity. In their words, "Although teachers feel capable of developing student creativity, they may not feel capable within their current environment. This difference is worth further investigation." (p. 332). While creativity is not the focus of their work, Zane (2015) suggests that there is an "intricate interrelationship between the physical structure of the room, the arrangement and distribution of space, and the individuals (teachers and students) who share the space." (p. 15). They argue that the physical environment sends a poor message to students and teachers alike, potentially affecting the value that they place on learning.

Discovering the answers to the research questions of this study is especially important because creative teaching is *essential* to learners. The benefits that learners enjoy when a teacher does their job in a creative way are certain. Creative teaching is linked to instructional effectiveness (Sawyer, 2011; Reilly et al., 2011; de Souza Fleith, 2000). Creative instruction enhances learning (Rinkevich, 2011). When instructors model creative thinking, it promotes creative thinking among learners (Nickerson, 2010; Horng et al., 2005; Burnard, 2012). Creative instruction is also an important piece to teaching *for* creativity (Sternberg, 2015; Cheng et al., 2010; Grainger, Barnes & Scoffham, 2004). Nurturing learner creativity (Beghetto & Kaufman, 2010) is a critical 21st-century skill to foster in learners to prepare them for life beyond the walls of school (Salpeter, 2003). Therefore, we should be knowledgeable about the contexts that enable instructors to engage in creative praxis and avoid the contexts that dissuade it.

The idea that the environment can impact behavior is profound, engaging the minds of psychologists as early as 1877 (Hellpach,1950) and giving rise to the field of environmental psychology. The idea that the environment can impact *creative* behavior is a modern idea that has defined a vibrant string of creativity research that may be fundamental to understanding the questions in this dissertation. The connections between creativity and work environments began with Amabile (1983) and extended beyond to support a series of investigations (Amabile 1996a, 1996b, 1997,1998) that define our current knowledge about creative environments. In 1996, Amabile et al. conducted a large-scale study measuring creativity in the workplace. The study validated

the significance of five work environment factors related to creativity in the workplace: autonomy, resources, encouragement, pressure, and organizational impediments to creativity. The contributions of this hallmark study are still relevant to contemporary work in this area.

Amabile et al. (1996) suggested that workplace creativity research should broaden to a variety of work environments to discover and define the creative contexts that are specific to particular professions. Since publication, this recommendation has not been explored in education. Starko (2013) reflects on this in their book *Creativity in the Classroom: Schools of Curious Delight,* remarking "it would be fascinating to think about what a parallel assessment for classrooms might measure." The lack of study may be attributed to the uniqueness of the job; while we embrace creativity in teaching, it is not a profession typically classified as "creative."

Workplace creativity research supports that the physical and socio-organizational environment matter to creative production (Amabile, 1996a; Amabile et al., 1996; Puccio et al., 2000; Phelan, 2001; McCoy, 2005; Vischer, 2007; Dul & Ceylan, 2007; Dul, 2009; Dul, Ceylan & Jaspers, 2011; de Korte et al., 2011; Dul & Ceylan 2011; Martens, 2011; Williams, 2013; Kafashpour & Gharibpour, 2016). It is reasonable to think that the work environment for teaching could relate to these findings.

Educational environments are conceptualized, planned, remodeled, and designed by interior designers, architects, and educational facility planners. When these professionals make decisions about the teaching and learning environment, there is a limited body of knowledge they have to draw to support creative instruction. The stakes are huge and go beyond just the impact on the users. According to the Annual School Construction Report, the United States spent 14-billion dollars in 2014 to build, expand, modernize, and retrofit schools (Abramson, 2015) with an estimated 45% allocated to improving existing facilities. The same report projected 13-billion for 2015, and 12-billion after that. Despite a small decrease in spending per year, the funding for school construction has maintained a multi-billion-dollar enterprise. The report also indicates the shifts in the type of spaces being built, indicating an increase in gathering spaces, and multi-story high schools with elevators (considered non-traditional).

While our understanding about instructional creativity is lacking, our knowledge concerning the environment and learners is not. Thus, an extensive body of research supports that there are important relationships between the environment and the learner. The design of the billion-dollar contemporary learning environments (also called 21st-

century learning environments) in Abramson's report are the physical manifestation of this knowledge. They are designed to support "4Cs" that are leading the direction in teaching and learning today: creativity, critical thinking, communication and collaboration (Benade, 2017). New buildings are constructed, and old buildings renovated to feature the elements known to support the 4Cs. These include interactive technology, and also distinct architectural aspects that differ from traditional, factory-like (Nair, 2014) school buildings. Key attributes include versatile and adaptable spaces, learning commons, gardens, fewer walls, modified and mobile furnishings, double-sized classrooms, dedicated project rooms, and more use of interior glass (Benade, 2017; Pearlman, 2010).

A new architectural language for schools has globally emerged, launching "patterns" and prescriptions for design (Nair, Fielding & Lackney, 2005). Some suggest that we lack the methodology to implement such prescriptions. Lembo, Mecella & Vacca remark, "The so-called "21st century schools" differ from the current ones in almost all the aspects: building architecture, furniture, teaching and learning methods." (2013, p.14). They argue that schools today resemble organizations, and that guidelines should be developed to design these new environments. The knowledge may be lacking but the resources supporting this shift are pronounced world-wide. In England alone, the Building Schools of the Future program launched an 80-million-dollar program in 2004 to renovate and replace schools to optimize the environment-learner relationship based on contemporary understanding (Pearlman, 2010).

Insight concerning the connections between the designed environment and teaching are clear. Creativity has emerged as a"21st Century teaching technique (Ford, 2016, p. 27) that has changed the "planning, designing, and utilization" of learning spaces. New pedagogies have also emerged as a response to the design shift of schools and new directions in education. Benade (2017, p. 38) summarizes the instructional challenge that accompanies this shift remarking that teachers today have to be "far more creative and innovative in their approaches to their work, indeed to attempt to surpass the attractions" that students are presented in contemporary learning environments. Ford suggests that contemporary research expand to "examine the interaction between pedagogical choices and the physical learning spaces," and to "provide information about the limitations some classroom designs impose on teachers' ability to utilize certain pedagogies." (p. 31). What is the experience of instructors who

are challenged with this demand for instructional innovation in these every-changing learning environments?

Most educators would agree that the elements present in an environment that support *creativity among learners* are not necessarily the same elements that support *creativity among teachers*. Most would also agree that the contexts that inspire or limit creative instruction extend far beyond the tangible attributes of the environment itself. Designers and planners can play an important role in supporting instructional creativity if they know where the overlaps are, or if there are unique aspects of the environment that instructors need, and learners do not.

Studying instructional creativity is a complex task. As a practice, we know that creative instruction involves a broad range of skills, experience, and perspectives (Ambrose, 2005). Thus, the environment is likely important to creative instruction in ways beyond built, physical characteristics. Csikszentmihalyi (1996) suggests that the complexity of studying creativity in general may attribute to the ability itself because it is subject to a "system of things," informed by the intersection of dynamic variables. In additional to the environment, they include interpersonal relationships, personal interests, and personal skills. Investigating creativity as product or behavior within a particular profession adds to this complexity because the dynamic variables may be different from one discipline to another.

The dynamic variables suggested by Csikszentmihalyi (1996) raise awareness to dimensions of education that might be exclusively important to the teacher; it's a job and it suffers from a high rate of attrition. The concern of effective instructors leaving the profession is a vivid reality in education today, and that presents another reason why this study is important; the environment might be a predictor of instructional effectiveness, and burnout. This notion assumes that creative and effective instructors are one of the same.

Hoy (2000) suggest that the socio-organizational aspects of the environment affect creative efficacy by augmenting a teacher's "confidence in their ability to promote students' learning." (p. 2). Tan & Majid (2011) found a link between creative self-efficacy and teacher happiness. Pas, Bradshaw & Hershfeldt (2012) found that instructor experiences and their perceptions of the school environment are important factors that predict teacher efficacy and burnout. Koo et al. (2013) found a strong relationship between creativity and teacher efficacy. Westervelt (2016) reported on why teachers

leave the profession and implicated work conditions, access to resources, and the environment as factors contributing to an attrition rate of 8%.

This research is not about teacher satisfaction or attrition. However, literature presented in Chapter 2 suggest connections between instructional creativity, efficacy, and the environment. The contexts that enable and limit instructional creativity distinctly address the sustainability of the profession. The findings of this research might provide new directions for to enhance understanding about these relationships.

One way to investigate our assumptions and to expand our knowledge is to design research that examines the experience of the instructor through the framework of creative tasks and perceptions. Another way is to learn from creativity research outside of educational constructs, such as creative production and performance in the work place. Both explorations are important and define the direction of this dissertation.

Role of the Researcher

This study is motivated by personal and professional interests, centered around understanding what conceptual elements of the environment matter to creative instruction. This research is designed from the perspective of a former teacher, a school designer, an educational facility planner, and creativity researcher.

First-hand classroom experience sparked an interest in school architecture. Practical experience as a school designer inspired reconnecting with the instructional stakeholders through facility planning. Curiosities and questions emerged while implementing prescriptive solutions for designing schools. A search for scientific findings linking the school environment with creative praxis revealed a gap and perceived disconnect between research and practice. Learning about the gaps as an experienced instructor and designer defined the origin of the questions presented in this study. They are the inspiration for this research. The progression from teaching to scholarship equates to many years of professional practice working towards understanding the interactions and relationships between instructors, creative practices, and the environment. This experience results in personal beliefs and assumptions that must be bridled to effectively investigate this topic and interpret the findings.

The author is a self-reported creative who has extensive knowledge about creativity; theories and models that define and outline the components of creative systems and creative people. Working as a professional on both ends of the user-designer continuum has resulted in biases about “good” schools as well; the author carries beliefs about creative teaching practices and preconceptions about effective

educational environments. As a parent, the author has the tendency to identify perceived trademarks of instructional creativity in their child's teachers with the assumption that they will be more effective. Identifying and considering these assumptions are a critical component of designing a suitable methodology to answer the research questions of this study and support reliable analysis of the data.

Overview of the Research Study

The contextual elements of the environment concerning instructional creativity are not known. What aspects of the environment relate to instructional creativity? This dissertation explores the importance of the environment to instructional creativity, defines the attributes of the environment that support instructional creativity, and defines the role of those attributes in mediating instructional creativity. Creative instruction impacts learners in a positive way. Creative teaching is effective teaching that enhances learning (Sawyer, 2011; Reilly et al., 2011; Rinkevich, 2011) and promotes creativity among learners (Nickerson, 2010; Horng et al., 2005). Understanding the effect of context on teaching professionals is essential.

The literature review presented in **Chapter 2** demonstrates the breadth of understanding about instructional creativity and associated gaps. The review includes knowledge concerning creativity and education and defines the constructs of instructional creativity. The review uses the Four-P Model of Creativity (Rhodes,1987) to guide a systematic analysis. This approach organizes the knowledge into four dimensions of instructional creativity: the creative person, process, product, and environment. This is synthesized as a conceptual framework and is used to inform a method of investigation that can answer the inquiry of this study.

The methodology presented in **Chapter 3** describes how the literature review informed a mixed-method approach suited to answer the research question. This includes information about a pre-dissertation pilot study conducted to evaluate and improve the research design. Collection methods, instrumentation, and protocols are provided.

The analysis of data in **Chapter 4** presents the major discoveries of this study. The findings represent the insight of teachers about the environment and creative instruction. The findings are supported by descriptive data.

The discussion presented in **Chapter 5** suggests the meaning of the findings, limitations, and implications of this research. Visualizations summarize the emergent themes. The discussion includes conclusions about the contributions of this work to

expanding our knowledge concerning creativity as field, and to education where creative praxis is essential. For recommendation, the discussion outlines important entry points for more focused investigations on this topic. This discussion is relevant to anyone invested in optimizing the place and practice of creative instruction.

In summary, this research does not investigate a causal relationship between the environment and instructional creativity. It is not an exploration of educational or developmental psychology. Rather, this work synthesizes the experiences of creative instructions to broaden knowledge concerning instructional creativity as a system in which the environment plays a distinct role. This research builds off of existing knowledge about creative instructors, creative work environments, and provides directions for future research. The longitudinal goal of this work is to gain knowledge about how the environment enables instructional creativity in all teachers.

Chapter II. Literature Review

Overview

The environmental contexts concerning instructional creativity are not entirely understood. This dissertation asks: What aspects of the environment relate to instructional creativity? This study aims to answer this question in three ways. First, by analyzing related literature. Second, by conducting an investigation that defines the key attributes of the environment. And third, by conducting an investigation that delineates the role of those attributes in mediating instructional creativity.

The literature presented in this chapter demonstrates the breadth of knowledge concerning instructional creativity and associated gaps. The review includes knowledge concerning creativity and education and defines the constructs of instructional creativity.

The Four-P Model of Creativity (Rhodes, 1987) is used as a tool to support a systematic analysis of the literature. This approach organizes the knowledge into four dimensions of instructional creativity: the creative person, process, product, and environment. The review first presents general knowledge about the Four-Ps, and secondly presents knowledge about the Four-P specific to the domain of instruction.

The review is synthesized as a conceptual framework and is used to inform a method of investigation that can answer the questions of this study.

Distinguishing Instructional Creativity from Teaching Creativity

The relationship of creativity to education has been a dynamic area of research in the United States for nearly seventy years. Much of the interest in studying creativity began in 1950 with J.P. Guilford's Presidential address to the American Psychological Association where he called attention to the topic (Sawyer, 2011). He proposed that creativity should be studied more intently as a measure of human ability. Prior to Guilford's address, intelligence was widely accepted to be the driving force behind human exceptionalism. Copious research has been conducted on this topic since and creativity is now understood to be an important aspect of human skills, behavior, and knowledge. This knowledge has transformed how we think about teaching and learning.

A dense timeline of research supports creativity playing an important role in learning. However, creative *instruction* has not always been viewed as different from learner creativity. Creative instruction is often lumped together with learner creativity. This has contributed to gaps that exist in our current understanding. In 1999, the National Advisory Committee on Creative Cultural Education proposed that creative

instruction warrants distinction. They advised that creative instruction should be distinguished from teaching *for* creativity because they are not the same. This endorsed focused investigations that discern instructor from learner which has helped further our understandings of instructional creativity as a complex system. Lucas (2001) suggests that the separation enhances our understanding about creativity in education, allowing for new questions and explorations.

The contributions to knowledge since these distinctions were recommended has helped define what creative instruction is and is not. It has also clarified what happens when it is present or lacking. When unable to engage in instructionally creative practices, the teaching profession is dull and is comparable to the work of a "technician," tasked to do things a specific way (Woods, 1995). Learners are disadvantaged when this happens. Sawyer (2004) suggests that instruction is not effective when it is scripted and technician-like. McWilliam (2008) suggests that when teachers demonstrate hesitation or resistance to change and uncertainty, they actually harm the "creative future" of their students (p. 127). Pleschova (2007) suggests that a lack of unique and non-routine tasks can negatively impact an instructor's engagement with their work. Davies et al. (2013) suggest in their literature review of 210 sources about creative learning environments that learners benefit when instructors engage in non-prescriptive planning (p. 88).

The benefits of creative instruction to learners are *substantial* (Newton (2013). Creative instruction is an important aspect of teaching *for* creativity and nurturing learner creativity (Jeffrey & Woods, 1997; Jeffrey & Craft, 2004; Grainger, Barnes & Scoffham, 2004; Beghetto & Kaufman, 2010; Cheng et al., 2010; Sternberg, 2015). Creative instruction is analogous to good teaching. It is linked to instructional effectiveness (Sawyer, 2004; Sawyer, 2011; Reilly et al., 2011) that enhances learning (Rinkevich, 2011). When instructors model creative thinking, it promotes creative thinking among learners (Nickerson, 2010; Horng et al., 2005). Creative instruction is original (Sawyer, 2004), strategic (Woods, 1995; Jeffrey, 2006), and exhibits an energetic delivery of content that learners find interesting (Lilly & Bramwell-Rejskind, 2004). When instructors deliver content in this way, it motivates their students (Pleschova, 2007).

The discoveries about creative instruction are expansive and rich. However, the creativity of individual instructors and aspects that support instructionally creative practices have not been given merited consideration. We generally lack knowledge about the creative behavior of teachers. Henriksen & Mishra (2015) attribute this gap in

knowledge to the nature of existing creativity research where understanding is substantiated by learner outcomes and perspectives. The literature tells us that we do not have to do that for every study because we know creative instruction benefits the learner.

Another contributing factor is that our knowledge of the field is largely derived from studies aimed to define individual attributes of creativity, measure creativity, and a wide-spread interest in identifying the accomplishments and contributions of prominent creatives (Kaufman & Beghetto, 2009). Others attribute the gap to a tendency to *not* distinguish creative instruction from teaching *for* creativity (NACCCE, 1999). Kalin (2016) attributes the gap to a deeper issue that relates to the structure of today's educational system. Kalin summarizes, "Even though employers claim to desire flexibility and creativity in their future workforce, these characteristics are largely alien to the standardized contexts of schooling that devalue the teacher's creative engagement with students, sites, and knowledge." (p. 9). The origins for why current knowledge suffers from a disparate interest in studying the teacher are not wholly understood.

Researching instructional creativity is an important but complicated task, compounded by the interrelatedness of teacher and learner. It is difficult to evaluate creative instruction and learning in isolation from one another (Jeffrey & Craft, 2004), because teachers are an "important part of the child's environment." (Ward, 2007, p. xx). However, it is arguably necessary to do so if we want to expand our knowledge. Our understanding about creative instruction is limited because it is largely based on work that uses the learner as the unit of study; learner-outcomes, perspectives, and interests. As a result, we are missing the narrative of the creative instructor. We know that creative instruction involves a broad range of skills, experience, and perspectives (Ambrose, 2005). We know what creative instruction is, why it's important, and how it benefits the learner. But, we don't know how to support or nurture it in teachers.

We are missing information about instructional creativity *as a system*. Csikszentmihalyi (1996) suggests that creativity in general is a complex system of contextually important parts that are interrelated. They include the environment, interpersonal relationships, personal interests, and personal skills. What are the contextual parts of this system for teaching? What manifests creatively enabling and limiting instructional experiences?

The literature presented in the following sections represent our current understanding about creative instruction and the elements that contextualize and impact

it. The literature is organized using the Four-P Model of Creativity (Rhodes, 1987) to substantiate creative instruction as a system, to reveal associations to creative systems outside of education, and to identify and summarize the gaps in understanding. The systematic review and resulting conceptual framework guide a research design that answers the questions of this dissertation.

Instructional Creativity as a System

Extensive research has defined our current knowledge about creativity and presents it as a system. This is a relatively new academic idea. Plucker, Beghetto, & Dow (2004) supported our general understanding of it as a system through their content analysis of existing literature. Their review clarified that the challenges of studying creativity are mostly centered around contextual challenges. They used their work to support the development of widely adopted definition, designating creativity as "the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context." (p.90). They suggest the understanding creativity as a system that is contextually dependent allows researchers to "articulate what creativity 'looks like' in light of various stakeholders…" (p.92).

Identified as both complex and subjective, much of the contemporary work aims to expand our definition and understanding about creativity as a system that is contextually dependent (Csikszentmihalyi, 1990, Csiksentmihalyi & Nakamura, 2014). A systems approach to understanding is paramount to creativity research today.

A variety of creative systems have been proposed, varying in both content and application. The Componential Theory of Creativity (modeled in Figure 2.1) is a popular systematic representation of organizational creativity (Amabile, 1983, 2011). The components include domain-relevant skills, creativity-relevant processes, task motivation and the social environment. The model proposes that cultural contexts and symbolism are related to the originality of ideas that an individual brings into a domain (where they are reviewed and validated for creative value). The model integrates environment as socio-organizational dimensions that include: types of tasks, the mission of the organization, scheduling, workload, position hierarchies, income, and other aspects identified as stressors.

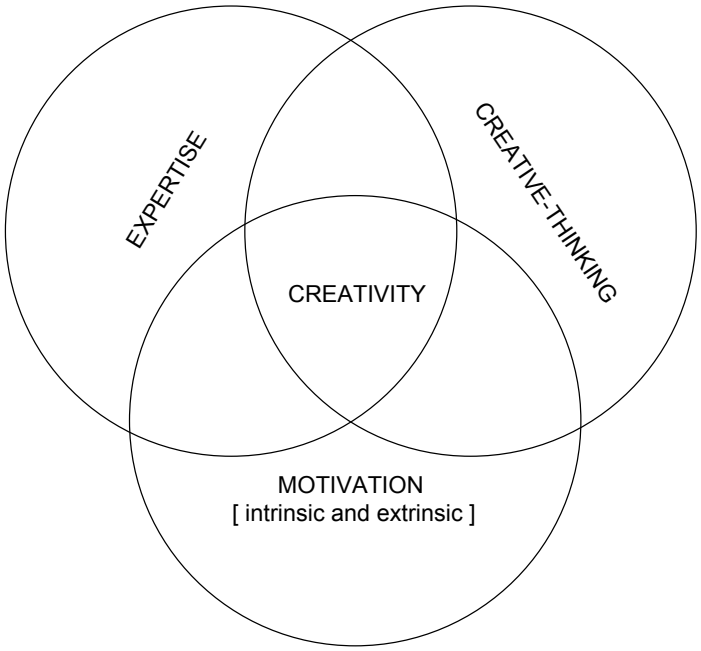

Figure 2.1. Componential Model of Creativity (Amabile, 2011)

Urban (2007) adapted the componential model to include six components in their Components Model of Creativity. Their expansion responded to the argued need to include aspects of cognition (a factor that Amabile's model does not address). Urban's concern and reason for adding cognition is the believe that "cognition is part of personality" (p.170), and therefore relates to how motivated and focused a person is during task motivation. Their adapted model is represented in Figure 2.2. Urban's model proposes that the environment is an integrated part of the system; a relevant aspect at individual, local, and societal or global scales.

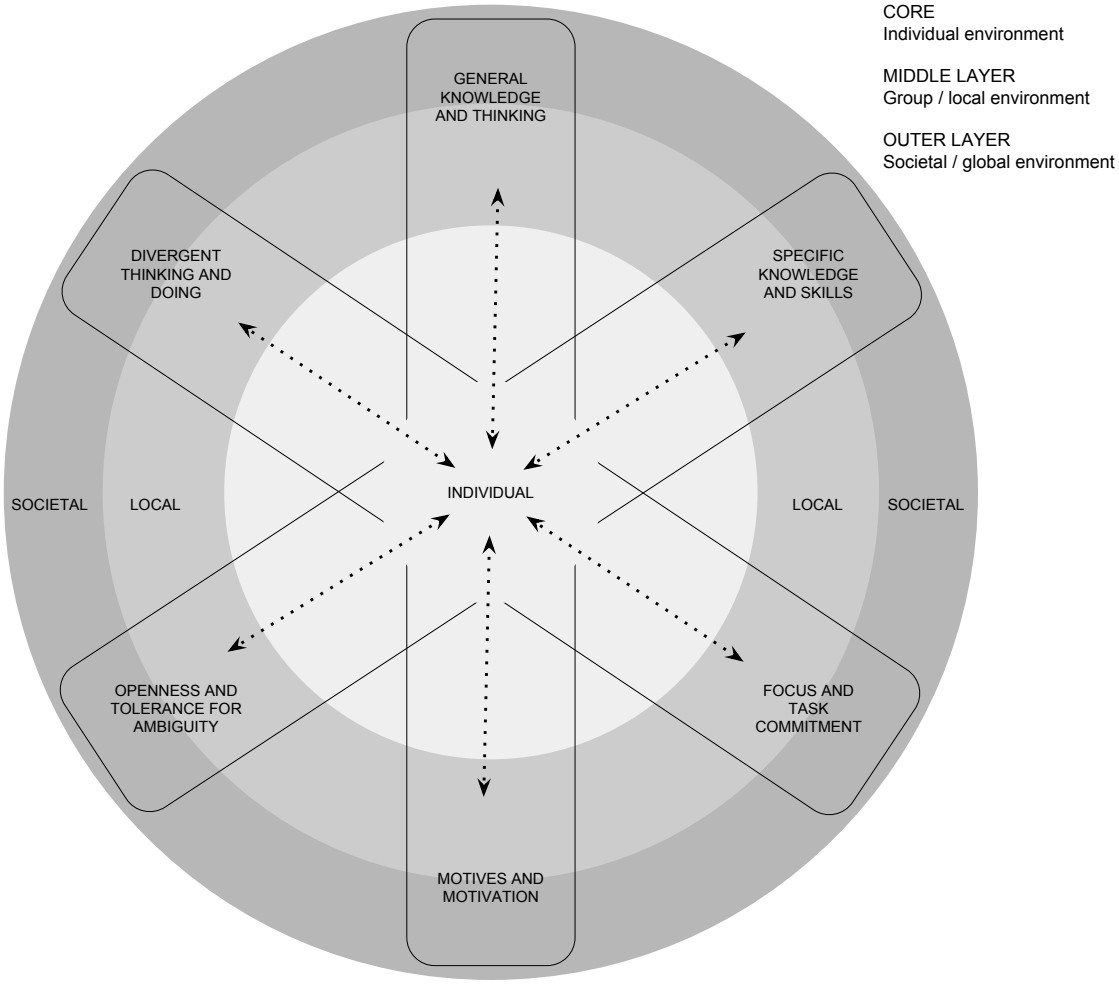

Figure 2.2. Components Model of Creativity (Urban, 2007)

The Systems (or General) Model of Creativity (Csikszentmihalyi & Nakamura, 2014) is a more generalizable model (Figure 2.3). This model has been used to understand creativity a wide variety of domains and contexts. The general model features components of environment within each lobe the triadic model, where press is defined by cultural, social, and personal attributes.

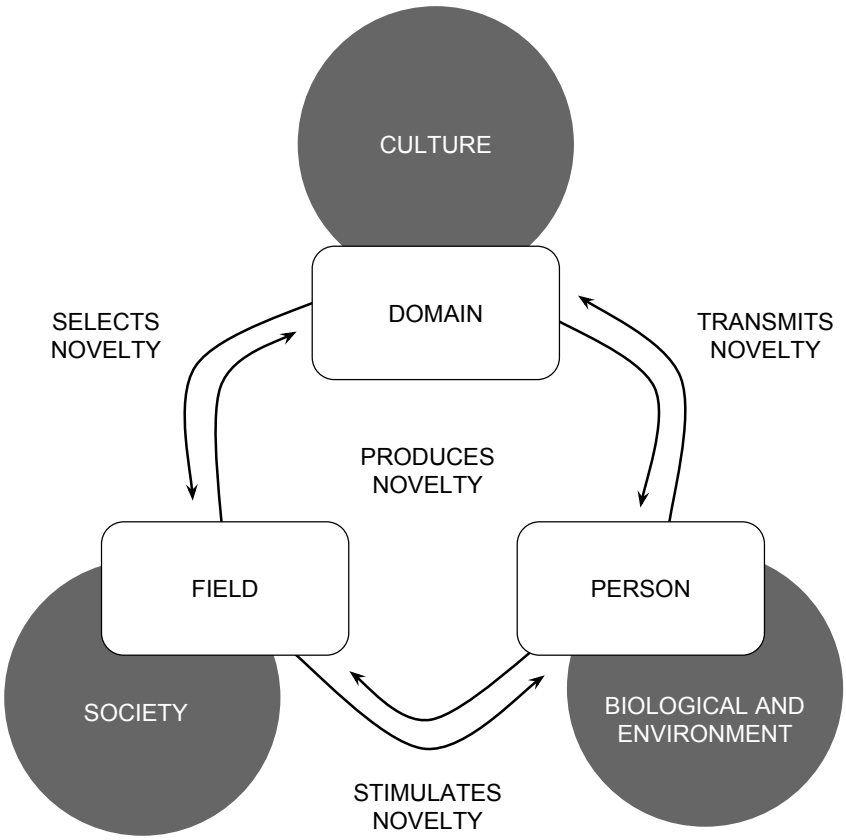

Figure 2.3. Systems Model of Creativity (Csikszentmihalyi & Nakamura, 2014)

Plucker, Beghetto, & Dow (2004) suggest that the environment is a catalyst in a creative system. They explain, “The environment-influences aspect of our definition was rarely found in the surveyed articles, but the research literature provides substantial evidence that specific aspects of one’s environment are positively related to the existence of creativity.” (p. 90). They describe the environment as “construed broadly” (p. 91). The issue they identify is important, nor entirely defined by the two systems described above.

The goal of this dissertation is to understand the importance of the environment, define key attributes, and delineate the role of those attributes in mediating instructional creativity. Accomplishing this goal requires investigating how the environment participates in a creative system that is *unique* to the profession. Zane (2015) suggests that “A classroom is more than a collection of items found within a space; it’s a complex system of relationships.” (p.15). Most instructors are likely to agree

with Zane. While creativity as a system of related parts is defined for a wide range of professional domains, we lack a systematic understanding of instructional creativity.

It is essential that the design of this research is fit to address the gaps in understanding about the environment and creative instruction. Instructional creativity can be systematically defined to reflect the contextual elements specific to creative instruction and support a conceptual framework that can guide a research design and enrich the analysis of data. That is the overarching goal of this literature review.

Currently, we do not have a defined system or conceptual framework unique to creative instruction. The Four-P Model of Creativity (Rhodes, 1987) guides the organization of literature in the following sections as a means to propose one.

Four-P Construct of Creativity

The Four-P Model was developed by Rhodes (1987) after compiling the available literature about creativity and clustering the definitions into themes. Four dimensions emerged from this analysis as distinct. Creativity is defined by person, process, product, and press (environment, place). The Four-P Model is a widely adopted approach guiding creativity research today. This section of text describes the four parts of Rhode's model in detail.

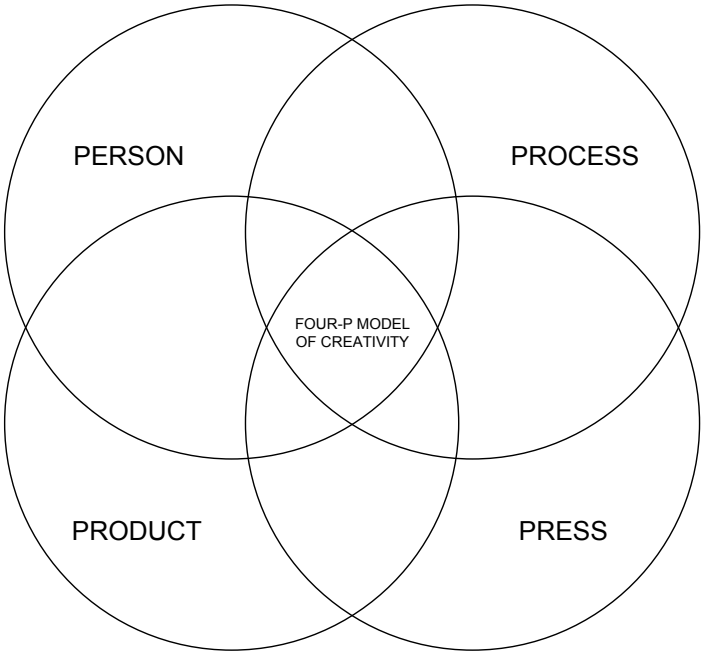

Figure 2.4. Four-P Model of Creativity (Rhodes, 1987)

Person

The Four-P Model describes a creative person as one who creates (Hasirci & Demirkan, 2007). It is widely accepted that a creative person creates novel ideas (Sternberg, 1999). But creativity is also considered one's ability to create iterations (Amabile, 1983; Feldman, 1999; Brennen, 2015). Defining a person as creative is sometimes viewed subjectively, and "creative" is often used flippantly to describe a person who has done something differently (Runco, 2014; Glăveanu, 2016). Others have argued that defining the preferences and behavior of creative people as paradoxal (Cropley & Cropley, 2008). However, quantifying creative ability has emerged as a conclusive science.

The concept of a creative "person" dates back to the work of Guilford (1957), suggesting creativity as a measurable ability. Guilford identified that creative people are distinguished by four measures: fluency (the ability to come up with several ideas), originality (the ability to come up with different ideas), flexibility (the ability to perceive alternatives), and elaboration (the ability to add details to ideas that enrich their meaning). Guilford integrated these measures into the early workings of an instrument to assess creative ability.

Torrance (1988) applied Guilford's work as the foundation for developing the Torrance Tests of Creative Thinking (TTCT). The TTCT measures creative ability by assessing divergent thinking skills, defined by four norm-referenced measures: fluency, originality, elaboration, and flexibility. The instrument presents three varying methods to assess these measures; a written/verbal method combined with verbal prompts, a written/verbal method combined with non-verbal prompts, and a figural method that implements non-verbal tasks and sketching. Other instruments are used measure creativity, especially for practical applications.

In psychometric terms, measuring creative ability is embraced as a conclusive science. The TTCT is the most widely used instrument for measuring creative thinking (Cropley, 2000; Kim, 2006; Starko, 2013) with high validity (Cropley, 2000; Cramond et al., 2005; Kim, 2006; Althuizen, Wierenga & Rossiter, 2010; Starko, 2013). It is identified as a reliable assessment of creative ability for its predictive validity (Althuizen, Wierenga & Rossiter, 2010). The TTCT defines creative ability by primary dimensions of originality, fluency, flexibility, and elaboration. We also know that individual creativity is linked to curiosity, openness, and risk taking (Csikszentmihalyi & Nakamura, 2006; Torrance, 1988; Cecil, Gray, Thornberg, 1995; Maksic & Pavlovic, 2001). Sternberg & Lubart

(1995), Finke (1995), and Turner (2013) suggest that intuition, perception and insight are important in “finding ways” to negotiate or think differently about a situation. Creativity is suggested as the ability for an individual to iterate (Amabile, 1983; Feldman, 1999; Brennen, 2015). Sternberg (2003) and Urban (2007) suggest that a creative person has a particular tolerance for ambiguity when perceiving a problem or situation. The TTCT measures these attributes as sub-dimensions.

Creative ability is understood as generalizable knowledge. Researchers typically agree how to define and measure the creative ability of individuals. However, we know little about defining creative individuals in a particular domain.

Process

The Four-P model describes creative process as operations that are performed in order to be creative. Cognitively derived, creative process is something that can be developed. A creative process involves engaging in the activity of developing an idea. This includes thinking and decision making, and can be informed by a motivation, inspiration and perspective (Rhodes, 1987).

Wallas (1976) is attributed to developed one of the most widely used and commonly adapted models of creative process. Wallas’ Four Stages of the Creative Process (Figure 2.5) delineated preparation, incubation, illumination, and verification as the essential activities. Preparation involves collecting information and perspectives. Incubation involves thinking about the information collected and may appear to others as “doing nothing.” Illumination involves realizing there are connections that were not seen previously, often referred to as a “eureka” moment. And verification involves presenting your ideas and illuminations to others in the domain where they are reviewed for their worth. These activities are not regarded as directional or exhaustive; a person engaged in the process may experience looping through and jumping steps.

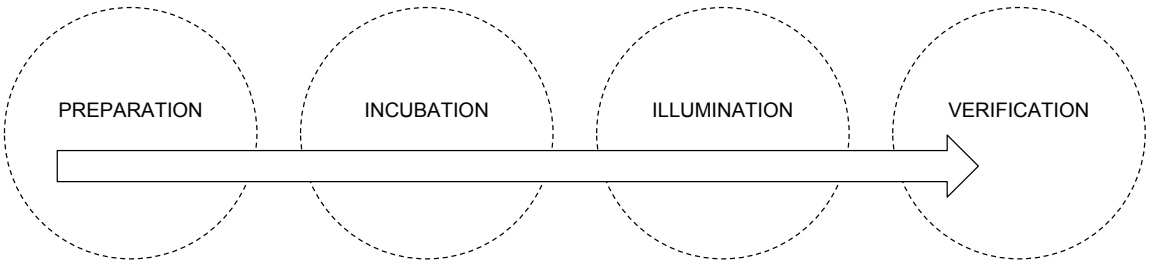

Figure 2.5. Wallas’ Four Stages of the Creative Process (1976)

Divergent thinking is regarded as integral to any a process that results in creative outcomes (Torrance, 1988). This idea is attributed to the early work of Guilford (1957) even though he himself did not claim or pursue evidence supporting a direct correlation. We now know that a creative process entails more than just divergent thinking; it requires *both* divergent and convergent thinking (Cropley, 2006). Creative thinkers toggle between divergent and convergent thinking during the process of generating and developing ideas. The creative process is defined by dynamic transactions between contradictory concepts; intrinsic and extrinsic motivation (Amabile, 1996b), toughness and sensitivity, closure and ambiguity (Cropley & Cropley, 2008).

Intrinsic motivation is fundamental to a positive creative process (Amabile, 1996a; Lubart 1990; Russ, 1993; Runco, 2004; Amabile, 2012). It relates to decision making and thinking in the act of creating, evokes personal feelings and variable modes of inquiry, and encourages exploration (Russ, 1993). Amabile (1998) suggests that the absence of intrinsic motivation in the creative process actually "kills" creativity. Csikszentmihalyi (1996) suggests intrinsic motivation as quintessential to "flow," a state or mental being where a person is completely immersed in what they are doing. When a person is experiencing flow in the process, they are able to achieve their most creative potential (Sawyer, 2011).

Product

Creativity is widely agreed as the ability for collaborative or individual efforts to produce novel and appropriate work (Sternberg, 1999). The thought that the resulting work is creative if it is unique, effective, and useful has been sustained for over 60 years (Plucker, Beghetto & Dow, 2004; Runco & Jaeger, 2012). However, several contemporary researchers have argued the term "creativity" as subjective (Martens, 2011). Others claim it as uncertain and too broadly used, thus a word devalued in meaning (Glăveanu, 2016). Runco (2014) suggests that term be limited to use as an adjective (i.e. creative products, behavior, thinking), and that creativity as a noun should be avoided. Much of these discussions stem from an overuse and generalization of the term, but also because creative things, actions, and behaviors are considered too subjective to define, and contextually dependent (novel, useful to who?).

A creative product is generally thought of as a physical artifact. Runco (2014) attributes this to art- and product-biases and describes how these partialities drive assumptions about what creative outcomes are and are not. Art bias is the idea that specific activities and talents have a claim on creative outcomes. Research supports that

this is often untrue – an artist's work may not be embraced as creative, and an artist may not have a measurably high creative ability. Product bias is the idea that creative products must be a physical thing, and that it is the final manifestation or end outcome of a creative process (Halpern, 2003).

However, a creative product is open to numerous results and outcomes; a physical artifact, action, or behavior. The Four-P Model designates a creative product as the "record" of one's thinking, or manifestation of an idea (process) into a "tangible form." A creative product is widely open to interpretation. Urban (2007) suggests creativity as a "hypothetical construct which describes or explains (to a certain extent) a special kind of human potential or aptitude. Creativity is not a power in itself; it is a human bound potential, dependent on, demonstrated and manifested by a person, his/her thinking, acting, and doing. This special human activity results in a new, innovative product." (p. 168-9).

Solomon et al. (1999) suggests that we define a creative product by criteria that acknowledges the contexts surrounding an individual producer because "results depend on factors such as the range of quality in the products to be rated, the qualifications and bias of raters, the relevance of the products hoses as reflections of the individual's creativity, and the demand of the rating task." (p.364).

Today, we understand that people from all levels of creative ability are capable of producing a wide variety of creative outcomes and that each outcome is valuable and contextually dependent (Plucker, Beghetto, & Dow, 2004; Martens, 2011; Csiksentmihalyi & Nakamura, 2014); creative products are not limited to production by eminent creatives (Kaufman & Beghetto, 2009). Furthermore, a creative product is now accepted to include creative imagination or playful approaches to solving problem (Runco, 2014), and instrumentation for measuring this "openness" for a broad range of people have been validated (Dollinger et al., 2004).

Press

The creative environment or "press" is defined by any forces or situations that shape our ideas and perceptions. Rhodes (1987) emphasized that the press as perceived human-environment relationships. Perception of these relationships are believed to be both individually and contextually defined (Rhodes,1987; Runco, 2004). Hasirci & Demirkan (2007) describe the press as the environment or the contexts surrounding a "creative act."

When creative environments were first studied as a serious research domain, there was a general assumption that the environment does not relate to creative acts or inspiration (Csikszentmihalyi, 1996). Today we know that the physical, social, and organizational environment *does* relate to creativity, and variably across domains (Amabile, 1983, 1996a; Csikszentmihalyi, 1996; Amabile et al., 1996; Sternberg & Lubart, 1996; Puccio et al., 2000; Phelan, 2001; McCoy, 2005; Sawyer, 2006, 2011; Vischer, 2007; Dul & Ceylan, 2006; Dul, 2009; Dul, Ceylan & Jaspers, 2011; de Korte et al., 2011; Dul & Ceylan 2011; Martens, 2011; Williams, 2013; Kafashpour & Gharibpour, 2016).

The connections between the socio-organizational press and creativity arguably began with Amabile (1983). Her work is the foundation of the Componential Model of Creativity, a systematic representation of organizational creativity (Amabile, 1983, 2011), and the Components Model of Creativity (Urban, 2007) (reference Figures 2.1 and 2.2). Both componential models propose that cultural contexts and symbolism are related to the originality of ideas that an individual brings into a domain (where they are reviewed and validated for creative value). The socio-organizational environment is integral to both models. The Systems Model of Creativity (Csikszentmihalyi & Nakamura, 2014) is a more generalizable model, used to understand creativity for a wide variety of domains and contexts. Similarly, the general model proposes that the environment plays and integral role throughout the system (reference Figure 2.3).

Instruments have been developed to measure creative press, especially in an organizational setting. The KEYS instrument (Amabile,1997) is a reliable means for assessing the workplace environment for creativity (Mathisen & Einarsen, 2004). The instrument assesses how well the environment supports autonomy, provides access to resources, supports a culture of encouragement, and minimizes pressures and organizational impediments to creativity. As a means to identify environmental attributes that optimize creative output, Mayfield & Mayfield (2010) developed furthered this work by developing instrumentation to measure perceptions of a creative environment.

Richardson & Mishra (2018) suggest that “the context in which creativity exists and the design of the environment *in* that context has been shown to be a key support for creativity” (p. 46). But, what environment designs support creativity? It is clear that we know more about the impact that social and organizational dynamics have on creative production (Stokols et al., 2002). And, the limits of our knowledge about the

physical press and productivity are not exclusive to creativity research – it is a much broader gap. This is evident in studies related to work performance and job stress. Vischer (2007) presents evidence of ergonomics, lighting, noise, and spatial configurations resulting in a press-person misfit, contributing to workplace stress and discomfort.

Plucker, Beghetto, & Dow (2004) suggest that the environment is a catalyst in a creative system. They explain, “The environment-influences aspect of our definition was rarely found in the surveyed articles, but the research literature provides substantial evidence that specific aspects of one’s environment are positively related to the existence of creativity.” (p. 90). They describe the environment as “construed broadly” (p. 91). Marten agrees, describing our understanding about creativity and the physical environment is fragmented (2011).

Though we know little about the relationship of creativity and the physical environment, McCoy & Evans (2002) conducted a study that offers some insight. Noting that too much research had emphasized the relationship of personality and creativity, they were interested in learning how creativity is fostered by the physical environment. They designed a two-phased investigation with sixty participants to evaluate the role of the interior design elements. The first study used photographs as a medium to evaluate how participants perceived spatial elements (i.e. shapes, light, size) as adding to the “creative potential” of a space (p. 418). They learned that spatial complexity, visual details, views to nature, nature materials, and spaces that support social gathering are perceived as important. They also learned that cool colors, lack of views, and manufactured and composite materials are perceived as lowering the creative potential of space. The second study used this information to evaluate the performance of the Torrance Test of Creative Thinking (Torrance, 1988) in spaces of high and low creative potential. They learned that the attributes that emerged from the first study are predictors of creative performance.

One possible limitation of current research is that it is largely focused on creativity in a business or organizational setting. This presents issues of transferability of knowledge that defines the creative press (Kristensen, 2004; Kafashpur & Gharibpour, 2016). Another possible limitation is that the impact that a social or organizational environment has on one’s creativity must consider broader meaning and the experience of that individual (Runco, 2014). In other words, no person-environment interactions are

the same for all. Stokols et al. (2002) suggest that this is also true for the physical environment.

Runco (2004) suggests that we are lacking research about how aspects of the environment inform a creative process. The most insightful knowledge about the relationships between physical press and process have emerged from few studies. As a highly regarded study on this topic, Kristensen (2004) produced substantial evidence that physical attributes have a positive impact on the creative process. They investigated the four-stage development of a collaborative project (preparation, incubation, illumination, and verification; Wallas, 1976), and conducted in a space that they distinctly crafted for the study. Informed by existing literature, the space was designed with a large centralized room that radiated outward to surrounding workshop clusters. To maximize adaptability and to allow for floor and wall space to feature artifacts of creative production, no furnishings were fixed. The design featured large tables, computers, and light colors. They found that Wallas' stages related to these physical properties in different ways. They conclude:

> *…there are differences in the requirements between stages. The preparation and elaboration stages typically require a combination of communal and private space. The incubation and insights stages probably require more private space. For example, useful information presented in the nature of objects, artifacts, tables, images, tabletops etc. can facilitate the process at an implicit level." (p. 95).*

McCoy (2005) reviewed the existing research on this topic to draw conclusions about creative contexts in workplace environments. They learned that social constructs and the characteristics of creative teams are an important factor for influencing creativity. Their review revealed that distinct attributes of the physical environment are connected to performance outcomes in the workplace, namely supporting positive social interactions and resulting in the creative production of teamwork. Social interactions are increasingly identified as important. Proximity to spaces and resources, space planning and layout, circulation patterns, surfaces and features that allow for personal customization and displayed thinking, and a variety of space types all identified as important in existing literature. Several of these features were also found to influence social behavior, in addition to technology access, comfort, size and adaptability of space, visual access to others, and the opportunity to work in multiple areas. They summarize

that the physical environment relates to *social* behavior more than it does to *creative* behavior.

Kristensen and McCoy's findings are important because they begin to differentiate individual creative production from group production and delineate how the environment may support different types of creative tasks. Sawyer (2006, 2011) has produced a broad range of work on this topic, relating group tasks and the socio-organizational environment. They emphasize that a creative climate is fostered when organizations provide support for collaborative work. When people work together, creative possibilities are optimized.

De Korte et al. (2011) used heart-rate data to investigate how creative task-types and the physical, interior environment relate. Their study was largely inconclusive in connecting the two. They found that the fluency and quality of ideas is not related to spatial changes and found some evidence that it can increase the originality of ideas. They found that the mood of an individual as an intervening variable to creative performance. However, their study suggests flexibility of the space as important in supporting a variety of tasks. They recommend that future research should investigate how physical press fosters creativity.

Relationships between mood, the physical environment, and optimal performance have also been explored by Barrett & Barrett (2010). They suggest that space has sensory stimulating attributes that can make a person feel positive, and can affect mood, performance, and health. Their evaluation of building-user relationships suggests that space takes a role in helping people reach their full potential. Barrett (2010) found that light and color stimulate a creative process.

Martens (2011) interviewed creative professionals to learn more about its relationship to Wallas' 4-Stages of the Creative Process (Similar to Kristensen). Their literature review suggests that a creative production is supported through the physical press when it facilitates communication between people, acknowledges the importance of individual needs, fosters flow (Csiksentmihayli, 1996), and facilitates creative thinking. Their study confirmed this impact as true. They discovered that physical attributes play an instrumental role in stimulating creative behavior and support a creative culture that is experientially positive. Their emergent findings describe how noise, temperature, space constrictions are creatively limited to creative production in teams. Tangible attributes they identify as important to supporting a creative culture, creative thinking, interactions, and flow include aspects of spatial layout, open configurations, adaptability and

flexibility, Tangible attributes they identify as important to supporting creative production include: plants, bright lighting, and windows.

Kafashpur & Gharibpour (2016) arrived at similar conclusions after conducting a large-scale survey about the physical press in workplace. They aimed to know more about the relationship creative behavior to a myriad of physical features, including: light, surfaces, personalization, privacy, collaboration, ergonomics, work area types, views to nature, comfort, color, and décor. They learned that the types of work surfaces, daylighting, and views strongly influence creative production.

Summary of Knowledge

Rhodes' model provides organization for describing the parts of a creative system (person, process, product and press). The information about each of these dimensions is discussed in depth because they outline a general baseline of knowledge about the Four-Ps. These dimensions are further reviewed and defined for instructional creativity in the next section. The goal is to reveal the gaps in understanding that are important to this dissertation.

For a dissertation hoping to understand the relationship of environment to the larger system of creative instruction, it is important to clarity that the Four-P Model does not infer *how* its parts relate. Sternberg & Lubart (1996) suggest that intellectual skills, knowledge, thinking style, personality, motivation, social constraints, and physical constraints of the environment have equal importance to a creative system. Simonton (2003) argues that person, process and product are the most important aspects of a creative system because the environment uniquely relates to each. Cramond et al. (2005) reviewed the available literature about measurably creative peoples and concluded that personality, experience and the environment play an important role in creative production. Hasirci & Demirkan (2007) suggest that contextual elements of the environment support the connections between person, process and product, and that creativity must be studied in a way that considers the interrelationship of each. All of these ideas suggest that understanding a creative system (of any type) requires considering a holistic role of the environment. These suggestions provide guidance to the research design.

The following sections present our current understanding about instructional creativity and the elements that contextualize it. The information is organized using Rhodes' Four-P constructs: person, process, product and press. This approach is appropriate to substantiate instructional creativity as a system, to reveal associations to

creative systems outside of teaching, and to identify and summarize understanding. The systematic review is used as a foundation to reveal the gaps in knowledge, build a conceptual framework for creative instruction, and guide a research design that answers the questions of this dissertation.

Four-P Constructs of Instructional Creativity

Creative Instructor

Instruction is regarded a highly complex undertaking that requires creativity (Ambrose, 2005; Burnard, 2012), and involves a broad range of individual skills, experience, and perspective. The creativity of an instructor is regarded as essential to creative pedagogy (Lin, 2011). Lin suggests that an effective instructor is one with first-hand experience of being a creative producer and demonstrate that they have an authentic interest in a creative outcome. Stansberry, Thompson, & Kymes (2015) suggest that a teacher must recognize and develop their own individual creativity if they are to be instructionally effective. But, what defines a creative instructor?

The creative activities of teachers have been observed as exceptional. Lilly & Bramwell-Rejskind (2004) summarizes that teachers exhibit “curiosity, originality, independence, risk taking, are energetic, have a sense of humor, seek complexity, are artistic, open minded, seek privacy, and are intuitive.” These qualities are “similar to those of the creative giants.” (paraphrased, p. 3).

However, Reuter suggests that teachers are often not delineated as creative. They write, “Those who adhere to the product approach define authors, artists, and scientists as creative persons. The product approach to creativity is confronted with the critique that it is difficult to decide if members of different domains (or professions) indeed produce exceptional ideas.” (2007, p. 80). This offers one possibility for why our knowledge about creative instruction is generally lacking, which will be discussed later in this section.

We generally agree how to define and measure the creative ability of individuals. However, we know little about defining creative individuals in a particular domain. We have limited information about creative individuals that enter the profession of teaching. Considering that the profession is tightly intertwined with high-stakes learning assessments, learner outcomes, and learner achievements, it is not surprising that the attributes of the creative instructor are not fully defined by contemporary research. This gap may be attributed to the methodology of existing studies. We lack research about

instructors that include measured creative ability. Rather, most work in this area uses self- or community-reported means to designate an instructor as “creative.”

Two studies demonstrate this gap. Reilly et al. (2011) synthesized findings from 10 years of existing to summarize the attributes of creative instructors. They found that creative instructors are intrinsically motivated and are aware of inter- and intra-personal aspects of their own character. Creative instructors believe that creative instruction means empathizing with learner needs, building strong relationships, and collaborating. They are confident risk takers, and actively implement strategies to make their teaching effective. The attributes that are summarized through their work is informative and complex, identifying the relevance of beliefs, behavior, and social interactions. However, the findings are limited because the creative abilities of the instructors were not validated by measurable dimensions defined by Torrance (1988). The instructors were either *reported* as creative by their respective learning communities or *assumed* to be creative because of accolades and teaching awards.

Bramwell et al. (2011) is another study that demonstrates that our knowledge about creative instructors is limited, particularly from a definable, measurable construct. They conducted a qualitative study aimed to distinguish the attributes of a creative instructor from non-creative teachers. They found that creative instructors place more value on intellectual topics, are more open to taking risks, express a stronger passion for teaching, and exhibit a higher degree of motivation on the job. The findings of this study are rich, but again limited because the creative ability of the participants was determined by self-reporting, and by identification by others.

The idea that personal feelings and beliefs have a relationship to individual creativity is a popular one in instructional research and complicates answering the question of this section (What defines a creative instructor?). Cropley & Cropley (2010) suggest that an individual’s mood alters the perception of instructional creativity. Cheung (2012) discovered that feelings and beliefs about instructional creativity are not necessarily a predictor of creative praxis; often important attributes of creative instruction that are expressed as important are not observably utilized in practice. Cheung’s findings suggest that the beliefs and creativity of a teacher are in conflict. Creative “self-worth” is also described as important (Beghetto, 2006). Rubenstein, McCoach, & Siegle (2013) found a “high correlation between teachers’ perceptions of their own creativity and the teacher self-efficacy subscale” (p. 332). Brennan (2015) suggest that personal feelings create a clash between “teacher” and “self.” This clash limits instructors from

being creative as they navigate the expectations and anxieties inherent to being an educator.

This review demonstrates that we can use the Four-P Model of Creativity (Rhodes, 1987) to define a "person" for instructional creativity. It also shows that measured constructs of creative ability offer a the most conclusive baseline for defining a creative person. The literature illustrates that defining a creative instructor outside of measurable means is complex, and inconclusive. In summarize, there is a general need to expand how we evaluate and define the creativity of instructors, and to define what attributes and behaviors are associated with those metrics. Future studies that examine the attributes of creative instructors should investigate the relationship those characteristics have with creative ability as developed and defined by Torrance (1988).

Creative Instructional Process

The Four-P Model describes creative process as operations that are performed in order to be creative. Cognitively derived, creative process is something that can be developed. A creative process involves engaging in the activity of developing an idea. This includes thinking and decision making, and can be informed by motivation, inspiration and perspective (Rhodes, 1987). We generally understand the components and benefits of a creative process, and *how* to guide others to engage and learn a creative process. But, what defines a creative instructional process?

Early discussions about the creative *instructional* process began to take form in the 1960s. This trend fell in sequence to a rising interest in creativity and divergent thinking in education that emerged after J.P. Guilford's Presidential address to the American Psychological Association in 1950 (Sawyer, 2011). Wendt (1961) was concerned about the misconceptions that people have about teaching, and its importance as a creative domain. In their article, they present teaching as nothing but a creative process, and argue that any one immersed in the profession "would readily agree that teaching is a creative process" (p.3). They continue with an illustrated comparison to activities generally regarded as creative:

> *"Surely teaching is no less a creative process than writing, painting, or composing, and the dedicated teacher can readily see himself as a creative artist, for in his work the elements of the creative process – immersion, openness to experience, inspiration, and elaboration – are all present."*

Today, the creative process that is typically endorsed by instructional training and university programs draw from Wallas' 4-Stages of the Creative Process (1976). For example, Starbuck (2012) suggests that a to be more creative, an instructor should engage a knowledge-acquisition state where they collect information, and then think calmly about the knowledge they've gained through that preparation before proceeding. These two guidelines mimic Wallas' first of four stages: preparation, incubation, illumination, and verification.

Studying the creative instructional process is complex. Reid and Petocz (2004) argue that creative instruction, processes, and the environment cannot be defined as a static state; they are within a set of highly integrated parts. The process and product of creative instruction are part of a "total learning environment" (p. 54), complicated by personal approaches to teaching, and normative aspects of the academic discipline or domain in which they teach. Thus, experiential writings about the lived-experience of teaching are the most descriptive sources we have to define what a creative instructional process is and is not.

Few studies that offer insight about tangible attributes of the creative instructional process. Most of our knowledge attempts to explain what factors inform an instructor to engage a creative process, or how a creative process results in effective instruction. However, this knowledge is limited. We know that creative instructors draw from past experience to develop a unique process that supports effective teaching (Craft & Jeffrey, 2004), and that the process includes conceptualizing, planning, questioning, modifying and integrating the methods and strategies that the instructor believes will be effective. Stansberry, Thompson, & Kymes suggests that when instructors engage in or practice a creative process, it increases their creative ability (2015).

Basom & Frase (2004) approached examining creative instruction through the lens of flow state (Csikszentmihalyi,1996) when a person is thought to achieve their most creative potential (Sawyer, 2011). Their findings suggest relationships between instructor flow, perceived efficacy, and motivation. Their work is important to defining the creative instructional process because motivation is fundamental (Amabile, 1996a; Lubart 1990; Russ, 1993; Runco, 2004; Amabile, 2012), relating to decision making and thinking, and encouraging exploration (Russ, 1993). The impact that motivation has on the creative process yields attention to studies that suggest links between instructor creativity and efficacy (Tan & Majid, 2011; Ferguson, Frost & Hall, 2012; Johnson et al., 2012; Pas, Bradshaw & Hershfeldt, 2012; Koo et al., 2013, Westervelt, 2016). Feeling-

oriented findings present expanded research opportunities that might reveal more about the creative instructional process.

Lilly & Bramwell-Rejskind (2004) were driven by a gap in literature indicating that "research studying everyday creativity in teachers is sparse." (p. 4). They conducted a longitudinal case study to understand the dynamics informing the creative practices of a single teacher. Their findings suggest that creative teaching emerges through preparation, intimate teacher-student connections, and dedication to reflective teaching (paraphrased, p. 17). Their model suggests that the creative teaching process is driven by self and socio-organizational factors. It does not suggest that aspects of the physical environment play a role in creative instruction.

Cropley & Cropley (2008) examined international paradigms of teaching to gather insight about creative instructional processes. Their study revealed inconsistent understandings about teaching creativity to learners, about creative thinking (cognitive), the personality and motivation of teachers, and the social aspects of the instructional environment. They describe motivation as paradoxal in the instructional process because extrinsic drive has been identified to both enable and limit creativity. They describe instructor knowledge as paradoxal because the creative process requires divergent thinking and free associations to ideate, yet the application of extensive knowledge is required to converge on an idea. Their study demonstrates how two educational approaches (one rooted in inventing, analyzing and proving, and the other rooted in mastering speed and accuracy of procedures) result in differentiated instructional processes, practices, and outcomes. This suggests that the environment has an impact on the creative instructional process and will be discussed in the section on "press."

Tsai (2011) proposed a framework for creative pedagogy that is process-oriented. The framework defines creative instruction as a highly integrated structure of components: *initiation*, *operation*, and *content*. Initiation is defined by an instructor facilitating curiosity, new experiences, and tolerance for alternative perspectives. Operation is defined by an instructor facilitating creative thinking, engaging exciting and innovative ways to teach, and facilitating exploratory learning experiences. Content is defined by an instructor facilitating opportunities to define and solve problems, and to reflect. All three dimensions of Tsai's model emphasize creative process through dialogic, improvisational, inspirational, philosophical, exploratory, and autonomously related means. The model suggests process as holistic to creative instruction.

Sawyer (2010) offers an alternative way of defining the creative instructional processes that is unique in this research domain. He suggests that creative instruction is "disciplined improvisation" (Sawyer, 2004) that demands an "emergent" approach that he compares to the extemporizing attributes of a jazz ensemble. This idea embraces the idea that creative process and creative outcome are heavily integrated in teaching, is collaborative, and is dynamic to the point that the "outcome is determined by all participants" (p. 181). Sawyer describes this creative process as contextualized procedures, similar to that of on-stage performing artists where a dynamic exchange of information and parts are constantly redefining the outcome. This idea is perceptive, providing insight for why we lack information about the creative instructional process while further supporting the holistic role of process to creative teaching. To Sawyer, the process is not just one aspect or step towards instructional creativity. The process is *everything*.

Zolfaghari et al. (2011) suggest that a creative instructional process that seems similar to what Sawyer describes with his jazz analogy but is instead defined by "creative questioning." This process facilitates a question-oriented approach to instruction and minimizes the dissemination of knowledge and promotes a dynamic relationship between the process of teaching and the process of learning. They suggest that a process where instructors and learners enter a mode of exploratory problem solving together reduces the pressures and barriers that limit learners.

Cheung (2012) conducted a multi-phased investigation to learn more about instructional creativity that involved talking to teachers and then observing them in practice. Cheung's study revealed incongruencies between knowledge about creative practices and the actual act of implementing a creative process into teaching. They found that instructors can describe what a creative instructional process looks like and why it is important. However, these aspects of process are not engaged or are difficult to identify in practice.

Finally, Davies et al. (2014) conducted a systematic review of literature about the roles and development needs of instructors in facilitating learner creativity. In their discussion, they describe a need to promote participatory creative teaching paradigms where the process and outcome are dialogic. They suggest that this should be fostered through continuous professional development.

The literature summarizes what we know about the creative instructional process, not what we know about teaching a creative process to learners. The review

suggests that our knowledge is somewhat inconclusive; we lack a clear definition for what a process of creative instruction looks like, and what factors enable and limit an instructor from engaging in one. But, it demonstrates that we can use the Four-P Model of Creativity (Rhodes, 1987) to define "process" for instructional creativity. The review suggests that this process is regarded as highly integrated with creative instructional outcomes (or product). The later will be discussed in the next section.

Creative Instructional Product

The thought that a creative thing or idea is unique, effective, and useful has sustained for over 60 years (Plucker, Beghetto & Dow, 2004; Runco & Jaeger, 2012). A creative product is generally thought of as a physical artifact (Halpern, 2003; Runco, 2014). However, a creative product is open to numerous results and outcomes; a physical artifact, action, or behavior.

The Four-P Model designates a creative product as the "record" of one's thinking, or manifestation of an idea (process) into a "tangible form." Solomon et al. (1999) suggests that we define a creative product by criteria that acknowledges the contexts surrounding an individual producer because "results depend on factors such as the range of quality in the products to be rated, the qualifications and bias of raters, the relevance of the products hoses as reflections of the individual's creativity, and the demand of the rating task." (p.364).

We understand creative products to be many things, and to take several forms. But what is a creative instructional product? Teachers often define classroom creativity by referencing the instructional strategies that they implement to support learning (Turner, 2013). However, research has delineated creative instruction in a variety of ways.

Instructional creativity is linked to effective teaching that enhances learning (Sawyer, 2011; Reilly et al., 2011; Rinkevich, 2011). When instructors model creative thinking, it promotes creative thinking among learners (Nickerson, 2010; Horng et al., 2005; Burnard, 2012). Creative instruction is also an important piece to teaching *for* creativity (Sternberg, 2015; Cheng et al., 2010; Grainger, Barnes & Scoffham, 2004). Nurturing learner creativity (Beghetto & Kaufman, 2010) is a critical 21st-century skill to foster in learners to prepare them for life beyond the walls of school (Salpeter, 2003). It is defined as the educational exchanges facilitated by the teacher that are "unique, customized and meaningful" (Rinkevich, 2011), and that are exciting, engaging and innovative (Craft, 2011). It is suggested as a pedagogical approach to "energize existing

structures" (Tsai,2015) and a means for enhancing learning (Cheng et al., 2010). Diakidoy and Phtiaka (2002) talked to teachers to gather their perspectives about creative instruction and found that teachers describe creativity as a skill and process that results in outcomes that are surprising and unexpected. Finally, Sawyer (2010) compares creative instruction to jazz and defines it as a form of "disciplined improvisation" that is intimately tied to teacher experience and the instructional process.

The definitions of creative instruction presented in the previous paragraph reveal that it is often lumped together with learner creativity. This has contributed to gaps that exist in our current understanding (NACCCE, 1999; Lucas, 2001). Starko (2014) argues that this assumption might still be perpetuated in practice and research -- that creative *instruction* has not always viewed as different. Creative instruction is often expected to provide students the opportunity to think creatively or enhance the creative ability of the students. They describe how instructional activities might "produces an enjoyable, or even creative, outcome," but they may lack value to others if they do not ultimately enhance the creativity of the learner.

The contributions of knowledge since these distinctions were recommended has helped define what creative instruction is and is not. It has also clarified what happens when it's present or lacking. When unable to engage exciting, engaging, and innovating (Craft, 2011) delivery of curriculum, the teaching profession is dull and is comparable to the work of a "technician," tasked to do things a specific way (Woods, 1995). Learners are disadvantaged when this happens. Sawyer (2004) suggests that instruction is not effective when it is scripted and technician-like. In their literature review about creative learning environments, Jindal-Snape et al. (2013) concluded that non-scripted instruction is an important aspect of acknowledging learner needs. McWilliam and Dawson (2008) suggests that when teachers demonstrate hesitation or resistance to change and uncertainty, that they actually harm the "creative future" of their students (p. 127).

Reid and Petocz, 2004) define creative instruction as an integration of environment and process that work to support an effective instructional product. They suggest that the environment that the instructor provides to their students is a creative product. They suggest that the encouragement they provide the students is a creative product. They suggest that the knowledge and perspectives they offer their students in their lessons, the opportunities they offer them to solve problems or explore unique ideas is a creative product. They add that a creative instructional product includes some

element of “surprise,” that might include feelings and expressions, instructional techniques and methods, and actual materials.

The literature demonstrates that we can use the Four-P Model of Creativity (Rhodes, 1987) to define a “product” for instructional creativity. We can generalize this product as something that has a positive impact on learners and can generalize it as effective instruction. However, defining the attributes of a creative instructional product are complex, as illustrated in the previous section on “process” and by Reid and Petocz (2004), Sawyer (2010), and Starko (2014). Creative process and product can be interpreted as inseparable in the instructional domain.

Creative Instructional Press

The previous sections provide an overview about our knowledge of the creative person, process and product in an instructional context of Rhodes’ Four-P Model of Creativity. The review suggests that person, process and product have an interactive relationship with each other, and with the fourth dimensions of Rhodes’ model: “press,” or the creative environment.

Creative press is defined by any forces that shape our ideas and perceptions. Rhodes emphasized press as human-environment relationships. Hasirci & Demirkan (2007) summarize the creative environment as the contexts surrounding a “creative act.” Richardson & Mishra (2018) suggest that “the context in which creativity exists and the design of the environment *in* that context has been shown to be a key support for creativity” (p. 46). This suggests that addressing the role of context is unavoidable when investigating the relationship of creativity and environment.

This section of the literature review is essential to this research because it clarifies the gap in knowledge that is the focus of this study. This dissertation aims to understand the environmental contexts that relate to instructional creativity. What aspects of the environment creativity enable and limit teaching professionals? What attributes support instructional creativity? What attributes mediate it? Current research lacks information about environments that foster teacher creativity (Stansberry, Thompson, and Kymes, 2015). The creative instructional environment is fundamentally undefined.

Our knowledge concerning creativity and the environment is primarily informed by organizational creativity research, a domain that has produced the most developed understanding of this topic. The findings that have emerged from these precedent studies provide useful insight for how to define and research a creative environment.

This includes ample evidence that supports that the physical and socio-organizational environment matter to creative production (Amabile, 1983, 1996a; Csikszentmihalyi, 1996; Amabile et al., 1996; Sternberg & Lubart, 1996;Puccio et al., 2000; Phelan, 2001; Mathisen & Einarsen, 2004; McCoy, 2005; Sawyer, 2006, 2011; Vischer, 2007; Dul & Ceylan, 2006; Dul, 2009; Dul, Ceylan & Jaspers, 2011; de Korte et al., 2011; Dul & Ceylan 2011; Martens, 2011; Williams, 2013; Kafashpour & Gharibpour, 2016). However, we still lack understanding about the role and attributes of the physical environment in supporting creativity. We seem to know more about the impact that social and organizational dynamics have on creative production (Stokols et al., 2002).

When creative environments were first being studies, there was a general assumption that we could not related the environment to creative acts or inspiration. The disbelief is captured by Csikszentmihalyi, claiming, “The belief that the physical environment deeply affects our thoughts and feelings is held in many cultures. [...] Unfortunately, there is no evidence – and probably there never will be – to prove that a delightful setting induces creativity” (1996, p. 135). At the time of publication, creativity researcher Theresa Amabile was already thirteen years into working on demystifying the role of the environment to creative production in the workplace. Our knowledge about this topic has expanded considerably since. Today we know that the environment *does* matter, and variably across domains. There is ample evidence that supports that the physical and socio-organizational environment relate to creative production (Amabile, 1983, 1996a; Csikszentmihalyi, 1996; Amabile et al., 1996; Sternberg & Lubart, 1996; Puccio et al., 2000; Phelan, 2001; McCoy, 2005; Sawyer, 2006, 2011; Vischer, 2007; Dul & Ceylan, 2006; Dul, 2009; Dul, Ceylan & Jaspers, 2011; de Korte et al., 2011; Dul & Ceylan 2011; Martens, 2011; Williams, 2013; Kafashpour & Gharibpour, 2016).

Creative workplace environments are dynamic area of research today and for a broad range of domains. The Componential Model of Creativity (Amabile, 1983, 2011), the Components Model of Creativity (Urban, 2007), and the Systems Model of Creativity (Csikszentmihalyi & Nakamura, 2014) are examples of the reach of a systematic understanding of creativity, all of which feature highly incorporated aspects of the environment (reference Figures 2.1 through 2.3).

A leading researcher, Amabile and Csikszentmihalyi’s contributions to understanding creative environments and creative systems are widespread. The environment has clear connections to creative production, and this knowledge has been explored and applied to a broad range of domains and contexts (Sawyer, 2011; Runco,

2014). Richardson & Mishra (2018) suggest that “the context in which creativity exists and the design of the environment *in* that context has been shown to be a key support for creativity” (p. 46). But, what environment designs supporting creativity? It is clear that we know more about the impact that social and organizational dynamics have on creative production (Stokols et al., 2002).

Research efforts concerning the workplace environment and creativity is prolific and ever-growing. However, recommendations over twenty years old are still unexplored. Amabile et al. (1996) recommended that future studies about workplace creativity broaden to a variety of environments to discover and define the creative contexts that are specific to particular professions. Since publication, this recommendation has not been explored in an instructional context, which is surprising. Starko (2013) reflects on this remarking, “It would be fascinating to think about what a parallel assessment for classrooms might measure.” The lack of study may be attributed to the uniqueness of the job; while we generally place value in fostering creativity of learners, teaching is not a profession typically acknowledged as “creative.” (Wendt,1961; Reuter, 2007; Martens, 2011; Glăveanu, 2014).

There are very few resources that provide specific information about how the environment supports *instructor* creativity (creative inspiration, their process of working in a creative way, the production of creative lessons, or whether they behave in a creative way in the classroom). Recent studies fall short of making this distinction. Though we have ample studies that investigated the learner, Beghetto describes the general lack of knowledge about the role that the classroom environment plays in creativity a “pitfall” of creativity research in education. (2007, p. 102).

The lack of knowledge about instructors may be related to a general discomfort of approaching an educationally-based study that deemphasizes the learner. The current learner-centric model of education is a culmination of work from educational psychology greats (John Dewey, Jean Piaget, Lev Vygotsy, and Carl Rogers). The contemporary model is described as “natural learning,” and rejects the teacher as the center. Armstrong (2012) writes, “traditional education ignores or suppresses learner responsibility” (p. 7). They argue that the teacher-centered model does not respond to how we know people learn.

Another possible reason for our lack of knowledge is current, global directions in curriculum. The Framework for 21st Century Learning is the leading guide, designed to prepare students for the skills deemed essential to work and thrive upon graduation

(P21: *http://www.p21.org/*). The framework places a strong emphasis on students developing the ability to think creatively, work collaboratively, and develop work with a trajectory towards innovation.

It's difficult to argue against the strong forces that policy has on creativity in education. Rubenstein, McCoach, and Siegle (2013) suggest, "It is possible that the standards movement alone is not responsible for the lack of environmental support of creativity development, but rather it is the application and implementation of the standards within individual districts the deters teachers from focusing on creativity." (p. 332).

The remaining text presents what we know about the creative instructional environment. The challenge of reviewing the literature is discerning teacher from learner. In some instances, it is unavoidable for reasons described above.

We have considerable knowledge about how educators can manipulate their environment to support creativity-supporting practices that benefit the learner (Sylvertsen & Pigozzi, 2010; Doorley & Witthoft, 2011). The environment is instrumental to student creativity by promoting the interaction and exchange of ideas, by engaging thinking that supports effective problem solving, and by initiating autonomous learning (Moran, 2010, Hondzel & Hansen, 2015). The work of Richardson & Mishra (2018) is a very recent, contemporary example of this. They developed a scale to measure the creative environment for learners. They determined there are three major components of the environmental that enable learner creativity, one of which is the physical environment. They found the availability of learning resources, displayed student work, spaces that support a variety of work modes, and comfortable and flexible furniture are all relevant to a creative environment for learners. Their scale is an important tool that educators can use to modify their space to support the creative development of their students. However, there is no evidence that the scale correlates to measuring a creative instructional environment.

A plethora of studies are precedent to the development of Richardson & Mishra's scale, resolving that the physical environment matters to learner creativity (de Souza Fleith, 2000; Davies et al., 2013; Boulos, 2013; Runco, 2014; Zane, 2015). The culmination of research is driving design trends in educational facility planning, architecture, and interior design. A new architectural language for schools has globally emerged, launching "patterns" and prescriptions for design (Nair, Fielding & Lackney, 2005). Places of learning are drastically reshaped and reconfigured from the traditional

precedent (Chapman et al., 2014), and the changes permeate all facets of the environment, including how schools are managed, organized, and designed (Pearlman, 2010). Some suggest that we lack the methodology to implement such prescriptions. Lembo, Mecella & Vacca suggest, "The so-called "21st century schools" differ from the current ones in almost all the aspects: building architecture, furniture, teaching and learning methods." (2013, p.14). Resembling organizations, they suggest that guidelines be developed to properly design these new environments.

Benade (2017) suggests that this shift comes with instructional challenges. Teachers must be "far more creative and innovative in their approaches to their work, indeed to attempt to surpass the attractions" that students are presented in contemporary learning environments (p. 38). Ford (2016) also suggests that there is a pedagogical response to the environment and identify the topic as an area that warrants investigation. They suggest, "The value of including available educational facilities in curriculum considerations raises awareness of how classroom design encourages or inhibits teachers' choices and abilities to utilize a variety of pedagogies." (p. 25).

Chapman et al. suggest that the non-traditional school designs "effectively harness creativity and agency" in learners. However, they identify conflicts. They raise the concern about non-traditional learning environments and students, remarking that "suck environments are not suited to all students." (p.44). However, their concerns extend to instructors. They suggest that trending open-space configurations can be disruptive or may facilitate a disconnect between learner and teacher. They recommend that the value and benefits of non-traditional learning environments require further investigation. Relative to this study, it seems critical to note that we lack research that reveals how instructors perceive the non-traditional designs. Do they support the creative delivery of curriculum? The support they provide instructional creativity is not clear. However, there is empirical evidence that an instructor's perception of the environment is an indicator of their motivation, job satisfaction, creative self-efficacy (Basom & Frase, 2004; Tan & Majid, 2011; Ferguson, Frost & Hall, 2012; Koo et al., 2013), relates to their attitude (Ford, 2016), and that it relates to teacher attrition and burnout (Johnson et al., 2012; Fernet et al., 2012; Pas, Bradshaw & Hershfeldt, 2012; Westevelt, 2016).

Most educators would agree that the elements present in an environment that support *creativity among learners* are not necessarily the same elements that support *creativity among teachers*. Most would also agree that the contexts that enable or limit

creative instruction extend beyond the tangible attributes of the environment itself. That said, the following text presents what we know about the creative *instructional* environment. This is included because it contextualizes our knowledge-based about the creative landscape of schools, and because we lack studies purely dedicated to the creative *instructional* environment. Presenting these highlight the gap in understanding that relate to the questions of this dissertation. The literature will be presented sequentially to cover learner-focused knowledge, knowledge that presents understanding about both learner and instructor, and then finally, instructor-focused knowledge.

Interest in researching the creative environment of schools gained momentum at the turn of the century. Many of these studies started by simply gathering perceptions from students and teachers. The first known study to investigate how a classroom environment fosters creativity was de Souza Fleith (2000). They asked teachers what stimulates learner creativity in the classroom. They concluded several pedagogical approaches that foster creativity, and that the exploratory environment encourages creative thinking and a creative process.

Physical attributes of the learning environment are linked to creative production of learners. Jankowska & Atlay (2008) used an available creative space on a university campus to learn how specific physical attributes result in enhancing learner engagement. Feedback from their participant survey suggested that physical attributes of the space contribute to a “learning ambiance” that positively engages learning and creativity. They include aesthetic qualities, the incorporation of unique technology, visual tools to express and display thinking like white-board walls, and flexible configurations. They also learned about physical attributes that are experienced as negative. They include deficient natural lighting, comfort factors like temperature and air flow, and the inability for the space to accommodate larger groups.

Cropley & Cropley (2008) found that the social press is the driving force behind learner creativity (p. 365), and that it’s largely managed by instructors. They summarize that various aspects of feedback, rewards, and guidance that a teacher provides support students in various phases of the creative process. This reinforces the idea that the teacher is an important attribute of the creative *learning* environment and highlights the importance of distinguishing teacher from student in research. Several other studies reviewed in the remaining text of this section reinforce this notion (Craft & Jefferey, 2004; Andiliou & Murphy, 2010; Lin, 2010; Davies et al., 2014).

Warner & Myers (2009) conducted a literature review to discover how space and place facilitate creativity. Using available literature, they compiled the known physical variables that influence creative behavior, including; color, lighting, furniture, decoration, elements that engage senses, resources and access to technology, class size, and physical configurations within and between physical rooms. Their conclusion implies that providing an environment that supports learner creativity is the obligation of the instructor.

Von Thienen et al. (2012) have also expanded our knowledge about spaces that foster "design thinking." They utilized a workshop approach working with students to find out how the place of learning encouraged innovation. They concluded that the material and physical environment in a design school setting is a mechanism that can inspire or cease a creative process. They describe spaces that limit favorable behavior as "anti-space." They define anti-space as closed doors, fixed and rigidly aligned furnishings, noise limitations, excessive book shelves, and spatial hierarchies that support a hyper-focus on the instructor.

One group of researchers conducted a large-scale literature review comprised of 210 sources to summarize what we know about creative learning environments. Published as Jindal-Snape et al. (2013) and Davies's et al. (2013), the team concluded that there are critical attributes of the environment that impact learner creativity that include: the flexibility of space, availability of resources, and opportunities for learning outside of the classroom. They also learned that the integration of play and games, an emphasis on learner autonomy, mutual respect between teacher and students, collaboration opportunities both in and outside of the classroom, and acknowledgement of learner needs matter to learner creativity. As an extended study, the team reviewed the literature to learn about the needs of teachers in promoting creativity (Davies et al., 2014). They learned teacher "skills, attitudes and willingness" to role-model are important elements that support a creative learning climate. These three reviews imply that investigating the educational environment in the context of creativity is difficult to divorce from a teacher's actions and behavior.

Boulos (2013) explored the hindrances on instructional creativity in a university setting. Through a qualitative method of discovery, they found that "classroom spatial arrangement and size can restrict new teaching and learning approaches" (p. 135) and that "physical space limitations, time and resource restrictions, and creative assessment challenges are perceived by academics as institutional structural constraints on their

creative teaching attempts." (p.139). Their study suggests the force that both physical and organizational factors influence instruction.

The inquiry and reflection on instructor creativity arguably emerged with Craft & Jeffrey (2004). Prior to their concerted effort to define the creative practice of teaching, most of the interest in the learner's creative landscape (as reviewed above). Craft & Jeffrey were clear in describing the problem as multifaceted. They remarked, "how complex, yet crucial, the learning environment is and how it is and how it is worth investing time in thinking about and constructing it. The environment is an intricate interaction of spaces, resources, values, patterns of expected behavior and interactions. These are under the control of early educators and can be shaped and sustained by them." (p. 10).

In their systematic analysis of existing literature on instructor beliefs about creativity, Andiliou & Murphy (2010) summarized perceptions that teachers have about the classroom environment. Their analysis suggests that an environment supports creativity in the classroom when it is open, can be reconfigured, different from traditional learning spaces, and centered on student learning. Their work indicates the attitude and teaching strategies of the instructor as an important yet subjective attribute of the creative environment.

Thoring, Luippold & Mueller (2012, 2013, 2015) contributed an in-depth understanding of press. Their research used cultural probes to examine creative spaces for design education. The probes were designed to collect a variety of semi-longitudinal data, which consisted of photographs, diary entries, and mapping the place of feelings and experiences. They found that creative work environments for students are classified by space types and spatial functions. They identified five creative space types: solidary (supporting individual work), team (supporting collaborative work), tinker (supporting experiments and hands-on activities), presentation (supporting the exchange of ideas), and transition (supporting inspiration, social interactions, and exhibition of work). They also identified five functions of creative spaces: knowledge repository, indicator of culture, manifestation of process, social, and stimulation. The primary goal of their research was to define the typology of creative spaces and functions from the perspective of design students. However, their discoveries using this method are more holistic. They concluded, "As space is part of the didactic arsenal of any educator, a better understanding of the relationship between creative functions and space types may help educators to align their particular classroom designs to their students' needs in the

creative process." (2012, p. 6). Thoring et al. (2017) used this work as a foundation to develop a "tool kit" designed as a guide reveal how the design education environment can be more creatively inspiring and functional for all stakeholders.

Despite the body of research aimed to understand more about learner creativity and the environment, White & Lorenzi (2016) describe our understanding about the complexities of creativity in education as "dearth." (p. 771). They used an existing creative space used for creative writing to propose a model that characterizes creative spaces that represent formal educational environments. They found that creative spaces are characterized by physical, social-emotional, and critical properties (aspects that stimulate experimentation and thinking). These dimensions are interconnected, and equally share attributes of being open, light, dynamic, stimulating, unexpected, and cozy. They propose that their systematic model of creativity can guide the development of main-stream educational environments. In discussing the physical dimension of their model, they summarize that "physical space is a contributory element to the generation of an environment which fosters creativity." But, they also suggest that the "physical environment is not in itself sufficient" because the social-emotional and critical dimensions are equally important (p. 786). An exacting aspect of their study is that they include several stakeholders in their research, including students, teachers, and staff. However, a limitation of their work is that they focus on defining a creative space for learning, and that they do not delineate the views of the various participant groups.

Creative instructors are challenged to provide a creative environment that meets the needs of their students, but also engages their own creative needs. This last section of text aims to feature the knowledge concerning the later to answer the question of this dissertation: What role and attributes of the environment enable and limit creative instruction? This topic is unpopular in the scope of contemporary trends in curriculum, pedagogy, and research. But this literature review supports that creative instruction benefits learners.

Attention should be given to the focus of the remaining studies about the creative instructional environment; most share a fuzzy boundary with the learner.

Martin (2002) used a spatial mapping strategy to evaluate the impact of different physical environments on teachers. Their findings suggest a strong relationship between press and praxis. The perceived controllability of the environment and classroom surroundings have an especially strong impact on a teacher's behavior. The physical environment can either disrupt or support a teacher as they perform their job.

Basom & Frase (2004) synthesized the available literature about the work environment of schools. At the time, there were only 10 research papers available on the topic. Their review suggests notable relationships between instructor perceived efficacy, motivation, and flow (Csiksentmihayli, 1996). They concluded that flow is determined primarily by an instructor's perception of the value that an organization places on them. "Flow" is relevant to the creative process and an individual's potential to generate creative work. Csikszentmihalyi (1996) suggests that work environments (organizational, social, and/or physical) support an immersive process when structured to present goals and rules clearly, to support a culture that provides feedback, and to encourage autonomy to modify tasks. The environment supports a flow state if there are minimal distractions. Basom & Frase suggest that instructor flow is affected by the presence of and frequency of visits from administrative figures, that the socio-organizational environment inspires an individual's process of working. They report when instructors experience a flow state that they feel immersed in teaching and more connected with students.

There is a general regard in teaching that one should accept their environment, creatively inspiring or not. Ward advises, "…there may be little you can do about your environment other than to try to select one that allows you to function as creatively as you can, and to encourage change when those in your environment tries to impose unnecessary limitations." (p. 2007, p. xxiii). Despite this regard, Cheung (2012) compiled evidence that when an instructor is able to autonomously manipulate or utilize their environment, it often does not happen. Cheung invested this by conducting a multi-phase study gathering teacher beliefs about creative instructional practices and the role and importance of the environment in supporting creative outcomes. They found that teachers generally support that the environment plays a scaffolding instructional role. The second phase of the study observed those instructors in practice. They found that instructor understanding and beliefs about the creative environment rarely manifest as applied knowledge. A limitation of the study is that the creative ability of the participants was not explored as a dimension of the study.

Rubenstein, McCoach & Siegle (2013) developed an instrument for evaluating the factors that relate to teaching creativity to students. They analyzed the existing literature to identify four dimensions that emerged as important: teacher self-efficacy, societal value, student potential, and environmental encouragement. The dimensions were used to develop a scale for evaluating the perceptions of teachers. They found that

the first three dimensions correlate to instructor perceptions of their own creativity, but that the fourth does not. The environmental was found to be a hindrance. In their words, “Although teachers feel capable of developing student creativity, they may not feel capable within their current environment. This difference is worth further investigation.” (p. 332).

The physical environment may be an indicator of pedagogy and an instructor’s attitude towards education. In their book on pedagogy and space, Zane (2015) suggests that these indicators emerge as supportive materials, and the arrangement of the space. They claim that there is an “intricate interrelationship between the physical structure of the room, the arrangement and distribution of space, and the individuals (teachers and students) who share the space.” (p. 15). They also argute that dilapidated structures send a poor message to students and teachers alike, potentially affecting the value that either place on learning. The limitation of Zane’s work is that it does not address how these conditions relate to instructionally creative processes or outcomes.

The final discussion on press merits reflection on the role of instructional creativity, efficacy, and environment. This research is not about teacher satisfaction or attrition. However, the literature presented in this review suggest that creative and effective instruction may be similar, if not the same. It is important to note the studies that have suggested a connection between the environment and the teacher that may be related to instructional creativity. The contexts that enable and limit instructional creativity distinctly address the sustainability of the profession. The discussion is relevant to this dissertation because there is empirical evidence that efficacy, creativity, and the environment are linked.

The belief in one’s creative ability is an important aspect to being creative. That said, Tschannen-Moran, Hoy, & Hoy (1998) found the instructional environment can have an overwhelming and deteriorating effect on teachers. It can impact teacher efficacy in a negative way, thus impacting the overall effectiveness of their instruction. Instructor efficacy is positively associated with the belief that they can control their environment. They recommend that more research is needed to expand our understanding about the socio-organizational contexts of the school environment and the relationship to teacher beliefs. Hoy’s (2000) efforts to measure the correlates to teacher efficacy suggest that the socio-organizational aspects of the environment affect this belief by augmenting a teacher’s “confidence in their ability to promote students’

learning." (p. 2) These findings imply that environment has a deeply personal impact on instructors which likely affects their deliverable to students.

Misra, Srivastava & Misra (2006) note that the environment as able to stimulate teacher imagination, a state that most "original" teachers report as experiencing in relation to their job (Oral, 2006). Rinkevich (2011) suggests that discouraging teachers to be imaginative is a barrier to creative instruction. Tan & Majid (2011) found a link between creative self-efficacy and teacher happiness. Johnson et al. (2012) found that instructor discontent is attributed to poor conditions of the work environment and suggest the environment as predictor of teacher attrition. Koo et al. (2013) found a strong relationship between creativity and teacher efficacy. Ferguson, Frost & Hall (2012) concluded a link through their review of the literature about occupational efficacy and the school environment. Pas, Bradshaw & Hershfeldt (2012) found that instructor experiences and their perceptions of the school environment are important factors that predict teacher efficacy and burnout. Ford (2016) argued that teachers' attitudes are affected by physical school facilities. Westervelt (2016) reported on why teachers leave the profession and implicated work conditions, access to resources, and the environment as factors contributing to an attrition rate of 8%. Finally, Basom & Frase summarize, "Based on the current teacher morale and climbing attrition rates, the frank reality is that educational organizations must focus on building work environments where teachers have greater opportunities to find success and, thereby, greater motivation and satisfaction." (2004, p. 242).

The literature demonstrates that we can use the Four-P Model of Creativity (Rhodes, 1987) to define "press" for instructional creativity. The context of environment relates to creative teaching, and includes physical, social, and organizational dimensions. However, we currently lack understanding about the depth and impact of such context. No conclusions or generalizations about the environment and instructional creativity can be drawn from contemporary knowledge.

Summary of Knowledge Concerning the Four-Ps of Instructional Creativity

This dissertation aims to know how context of the environment relates to instructional creativity. Which aspects of the environment creatively enable and limit teaching professionals? The constructs of the Four-P Model of Creativity (Rhodes, 1987) were used to organized contemporary understanding concerning this topic, and to illustrate the gaps. This approach was selected because Rhodes' model is widely used to understand creativity in non-educational work environments where creative

performance and outcomes are desired. While the Four-P Model is popular in creativity research, it has not been extensively utilized to delineate the contexts of creative instruction.

The previous sections outline what is generally known about the Four-Ps (person, process, product, and press), and how instructional creativity is defined using the four dimensions. These dimensions were presented as the creative instructor, the creative instruction process, the creative instructional product, and the creative instructional environment. The review illustrates that contemporary makes it difficult to determine how important the environment is to creative instruction. The Four-Ps of instructional creativity are not fully understood, nor equally investigated. Figure 2.6 illustrates the breadth of research on this topic.

The literature reveals that there are limitations to how existing research defines the creative instructor. Instruments that measure creative ability are not widely implemented to define the creativity of teachers. Yet, "person" is the most generalizable component of the Four-P Model of Creativity (Rhodes 1987) because we have valid (Cropley, 2000; Cramond et al. 2005; Kim, 2006; Althuizen, Wierenga & Rossiter, 2010; Starko, 2013) and reliable (Althuizen, Wierenga & Rossiter, 2010) means to measure creative ability (Torrance, 1988). The defining a creative instructor outside of measurable means is inconclusive. The interest in teachers as "creative people" seems to be lacking. We need new studies that put the creative instructor at the center.

The processes that go into creative instruction is inconclusive. The review suggests that our knowledge we lack a clear definition for what a process of creative instruction looks like, and what factors enable and limit an instructor from engaging in one. The review suggests that this process is regarded as highly integrated with creative instructional outcome, or product.

Creative teaching is generally the primarily focus of research on this topic. The "product" of creative instruction has extensively been defined and investigated. Much of this work has been through the lens of defining instructional effectiveness and evaluating creative teaching for the value to learners. We can generalize this product as something that has a positive impact on learners and can generalize it as effective instruction. Process and product are commonly interpreted as inseparable in the instructional domain.

Figure 2.6. Four-P Constructs of Instructional Creativity Indicated in the Literature

PERSON | Instructor

Ambrose (2005)
Andiliou & Murphy (2010)
Beghetto (2006)
Bramwell et al. (2011)
Brennan (2015)
Burnard (2012)
Cheung (2012)
Cropley & Cropley (2010)
Lilly & Bramwell-Rejskind (2004)
Lin (2011)
Reid and Petocz (2004)
Reilly et al.
Rubenstein, McCoach, & Siegle (2013)
Stansberry, Thompson, & Kymes (2015)

PROCESS | Instructional Process

Andiliou & Murphy (2010)
Basom & Frase (2004)
Craft & Jeffrey (2004)
Cropley & Cropley (2008)
Davies et al. (2014)
Lilly & Bramwell-Rejskind (2004)
Reid and Petocz (2004)
Sawyer (2010)
Stansberry, Thompson, & Kymes (2015)
Starbuck (2012)
Tsai (2011)
Wendt (1961)
White & Lorenzi (2016)
Zolfaghari et al. (2011)

PRODUCT | Instruction

Ambrose (2005)
Andiliou & Murphy (2010)
Beghetto (2006)
Burnard (2012)
Cheng et al. (2010)
Cheung (2012)
Craft (2011)
Cropley & Cropley (2010)
Davies et al. (2014)
Diakidoy & Phtiaka (2002)
Ford (2016)
Grainger, Barnes & Scoffham (2004)
Horng et al. (2005)
Jeffrey (2006)
Jindal-Snape et al. (2013)
Lilly & Bramwell-Rejskind (2004)
Lin (2011)
Lucas (2001)
McWilliam & Dawson (2008)
NACCCE (1999
Nickerson (2010)
Reid and Petocz (2004)
Reilly et al. (2011)
Rinkevich (2011)
Sawyer (2004)
Sawyer (2010)
Sawyer (2011)
Starbuck (2012)
Starko (2014)
Sternberg (2015)
Tsai (2011)
Tsai (2015)
Turner (2013)
Wendt (1961)
White & Lorenzi (2016)
Woods (1995)
Zolfaghari et al. (2011)

PRESS | Instructional Environment

Andiliou & Murphy (2010) *
Basom & Frase (2004) * | ***
Boulos (2013) * | ** | ***
Cheung (2012) * | **
Ford (2016) * | ***
Lilly & Bramwell-Rejskind (2004) * | ***
Martin (2002) * | **
Reid and Petocz (2004) * | ^
Rubenstein, McCoach & Siegle (2013) * | **
Ward (2007) * | **
White & Lorenzi (2016) * | ^

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* *Findings have a weak relevance to the research question*
** *Environment can be creatively limiting*
*** *Source connection to creative teaching based on researcher assumptions*
^ *Environment plays integrated role in a system of creative instruction*

The least researched and defined dimension of creative instruction is the environment. The literature suggests that physical, social, and organizational factors play an important role in either limiting or enabling creative instruction. However, the knowledge is grossly deficient in all respects. We particularly lack evidence about the physical environment.

One source of deficiency is method of approach. A high number of exiting studies primarily use the voice of the teacher to understand the creative learning landscape, and not to understand the instructor. Another source of deficiency is that there is a higher interest in generating knowledge that can guide teachers to manipulate the environment to support learners. No work has been generated to explore what teachers autonomously do because it's inspiring, fulfilling, and engaging to them as creatives. Another issue is the lack of studies that utilize architectural descriptors that correlate to language used in the design industry.

The literature demonstrates that separating the instructor from the learner is an inherent challenge to researching creative teaching and the environment. Studies that are focused on learner-outcomes and creativity have produced copious knowledge about the environment, and that knowledge has been used to inform a new type of architectural design for schools. However, creative instruction and learner creativity are not the same. Whether a creative environment for learners is transferrable to instructors is not known.

Conceptual Framework for Instructional Creativity

The Four-P model is widely used for describing the parts of a creative system (person, process, product and press). In this review, the model worked as an effective guide to organize the literature and reveal the gaps relevant to the research questions.

The Four-P Model does not infer *how* its parts relate. However, the literature provides ample evidence that they do (Sternberg & Lubart,1996; Simonton; 2003; Cramond et al., 2005). Hasirci & Demirkan (2007) suggest that contextual elements of the environment support the connections between person, process and product, and that creativity must be studied in a way that considers the interrelationship of each. The literature suggests that understanding a creative system (of any type) requires considering a holistic role of the environment. These suggestions provide guidance to the research design.

The existing studies on this topic support that there are relationships between the instructional person, process, product and press. NVIVO (Qualitative Analysis Software)

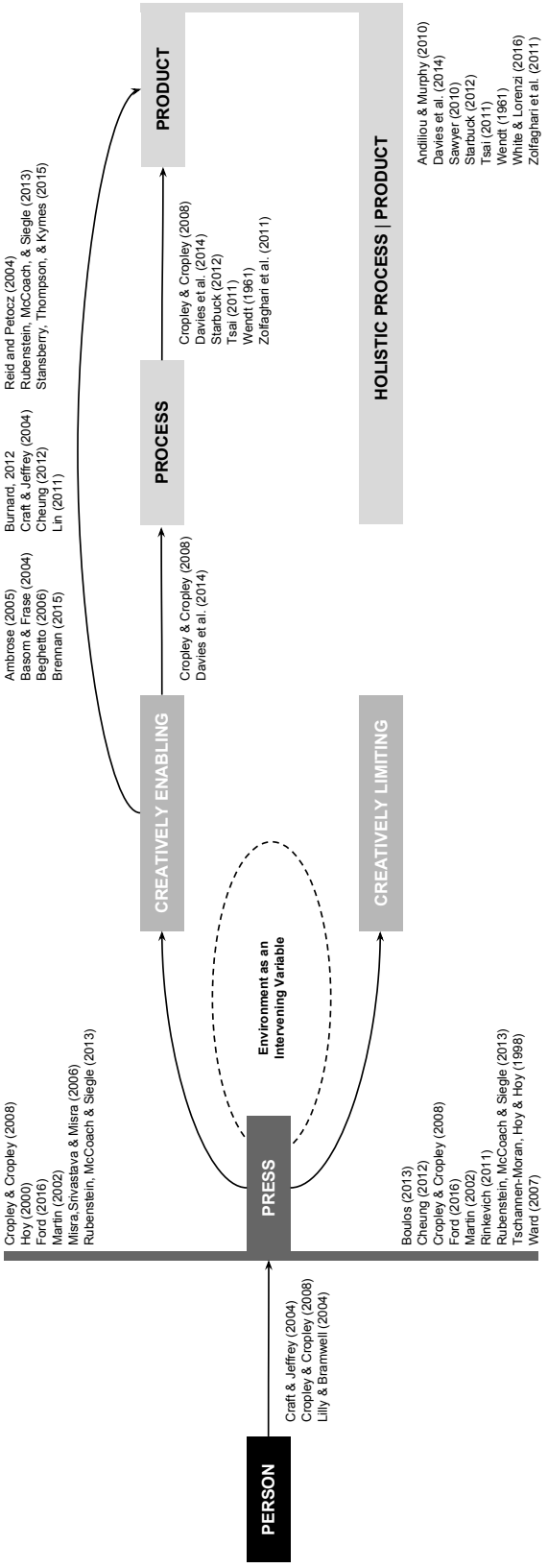
was used to analyze the articles and organize the relationships into a framework (Figure 2.7). Process coding (Saldana, 2016) was used as a method to evaluate the relationships between the Four-Ps of instructional creativity that were presented in the literature review. Process coding is useful when mapping relationships, developing models, and for linking data (p. 114).

Figure 2.7 provides significant insight about instructional creativity that can be used to guide this research and future studies. The insight of the resulting framework is three-fold. First, it supports that instructional creativity is a system of interactive parts. The relationships of the system be defined using the Four-P construct. Directional relationships between the parts are implied. This suggests that any study aiming to understand instructional creativity should consider the relationship of the parts: person, process, product, and press. This dissertation is concerned with the context of environment to creative instruction. This suggests that the method for discovery to understand how context of environment relates to creative instruction can be explored by focusing on the parts of the system that have an immediate relationship with press.

Second, the framework suggests that “person” and “press” frontload the system. The environment appears to be an intervening variable that negotiates the perception or occurrence of creatively enabling or limiting conditions. As a creative gatekeeper, the environment determines the resulting instructional processes and outcomes. This implores a discussion concerning the relevance of the Theory of Affordances, developed in 1977 by J.J. Gibbons.

The main idea of the Theory of Affordances is that our animal-environment world consists of affordances, or “possibilities for action.” For an action to occur, it is dependent on an animal to “see” the possibilities that any condition, material thing, or environment affords. To perceive affordances, a person must engage with the physical and symbolic dimensions of the environment. Gibson argues that an environment is meaningful in itself, and that action possibilities exist whether or not they are perceived by a person. The Theory of Affordances puts environmental psychology at the center and suggests that transactions occur between a person and their perception of the environment., and that artefacts and physical things are instructions for behavior. People can change the environment and can also *be* changed by their environment (Gifford, Steg & Reser, 2010).

Figure 2.7. Four-P Framework of Instructional Creativity Suggested by the Literature



Glăveanu (2012) expanded on Gibson's Theory of Affordances to reinforce that the physical or built environment is not a "stimulus." Rather, the physical and material world consists of affordances that can "inspire" behavior in humans. This suggests that an environment makes behavior possible yet does not cause the behavior. This raises questions about agency (a trait argued to belong to animals and humans alone), and autonomous actions of individuals; what drives us to act or not act?

These questions in mind, Glăveanu developed Gibbon's theory to understand how the environment and creative production interact. They examined Gestalt Theory, cognitive psychology, and ecological psychology to propose a tripartite model, or Theory of Creative Affordances (Figure 2.8). The major construct of Glăveanu's theory is that creative, behavioral outcomes are at the whim of a person perceiving the possibilities of the environment. Creative behavior is realized when a person as able to engage with seeing beyond what *should* be, *would* be, and *could* be done. A person who can see beyond these constructs would realize there are un-invented, un-perceived, and un-exploited possibilities. The Theory can be used to understand the intersection of the material and physical world and creative expression.

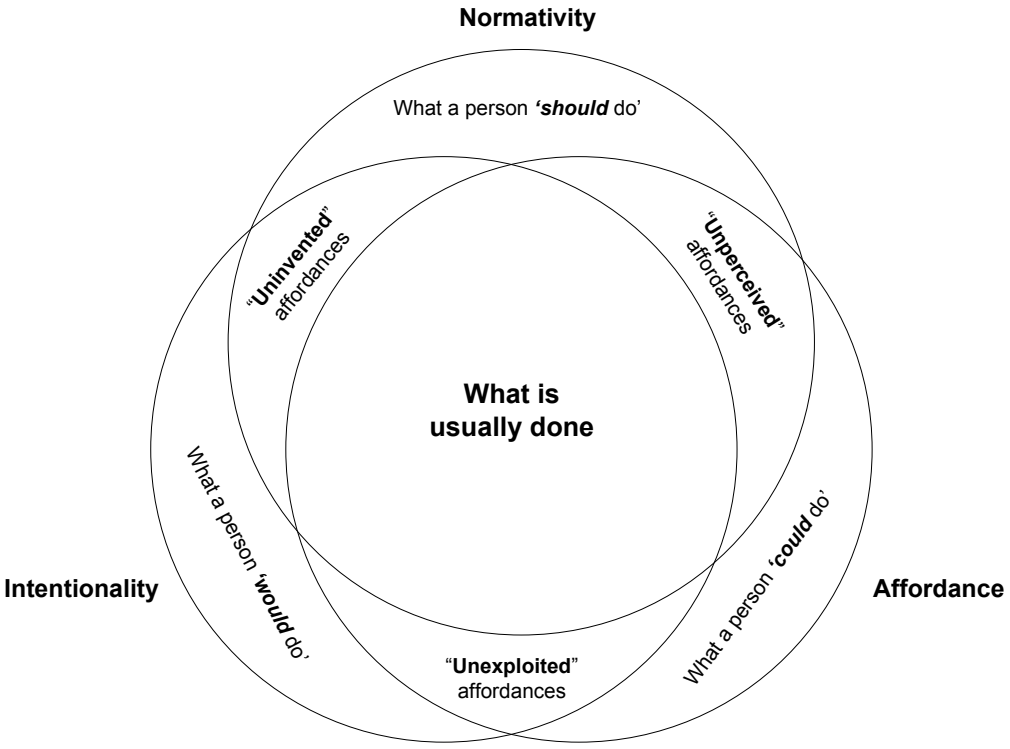


Figure 2.8 Creative Affordances Model, compiled originally by Glăveanu (2012, p. 197)

To summarize the second insight about the framework in Figure 2.7, “person” and “press” front load Four-P system of instructional creativity together, and the environment is suggested as an intervening variable. The Theory of Creative Affordances provides understanding about how these two dimensions of the Four-P model work together. Arguably, the perception that a creative person has on the environment cannot be divorced from what they do in that environment This suggests that the method for discovery to understand how context of environment relates to creative instruction should be explored by gathering that perceptions of the teacher.

Third, the framework has distinct similarities to an existing Four-P framework emerging from workplace creativity research that originally emerged from Dul & Ceylan (2006). The literature review in this chapter supports that our understanding concerning the environment and instructional creativity is limited. Sailer (2011) suggests that “Using approaches normally not employed together can bring new insights” to research (p. 16). They attribute our limited knowledge about professional creativity to the failure to work across disciplines. Sailer’s recommendation prompted a search for literature outside of the educational domain.

Workplace creativity research represents an area of study that has also struggled to define how the physical environment mediates creative behavior (Franck, 1984). Studies concerning workplace creativity are prolific today, but they still struggle with the problem identified by Frank. Dul, Ceylan & Jaspers remark, “very little attention is paid to the impact of the physical work environment on creativity.” (2011, p. 7).

Dul, Ceylan & Jaspar represent on the most productive research groups in contributing knowledge about the environment and workplace creativity. They compiled precedent literature to make to make assumptions about the creative enhancers in the workplace environment. The information was used to propose conceptual model representing a system of creative person, press, process and production. They implemented a large-scale survey to test hypotheses about the relationships between the parts of the system. The survey was distributed to “knowledge workers,” identified by Florida (2005) as a “creative class” of individuals. The results suggested that certain aspects of the environment are more important to creative performance. The most important is the creative personality of the person. The second is the socio-organizational elements of the workplace. The third is the physical environment, emerging as the least important to creative product.

Their resulting model (Figure 2.9). suggests that a creative person and multiple aspects of the environment inform a creative process, and that the process informs the creativity of the outcome (or performance). These relationships are similar with the conceptual framework that emerged from this literature review (Figure 2.7) in that "person" and "press" represent the frontload of the creative system.

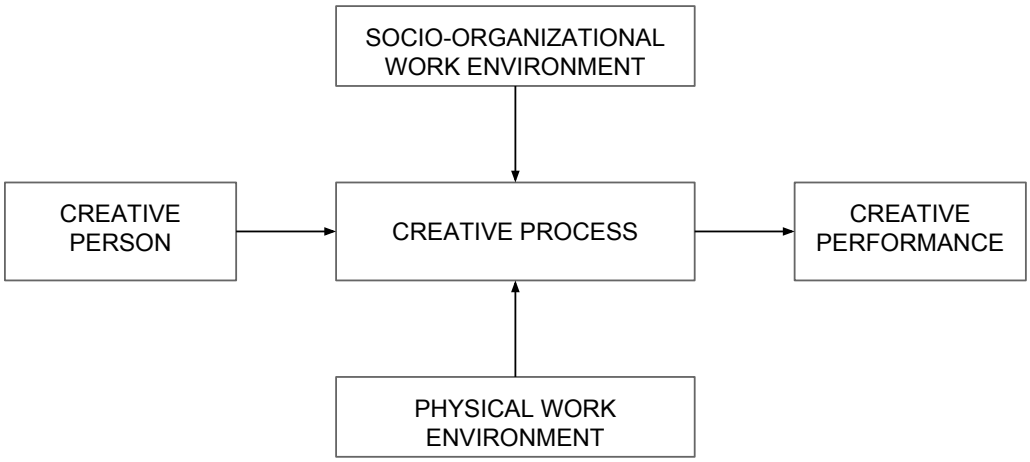


Figure 2.9 Relationship of the Four-Ps in the Workplace, compiled originally by Dul, Ceylan & Jasper (2011, p. 33). The conceptual framework indicates the relationships between a creative person, environment, process and performance in a workplace.

Dul, Ceylan & Jaspar' (2011) compiled a list of physical and socio-organizational elements of the work environment that are "possibly" related to creativity and are represented in Table 2.1. The elements demonstrate that the environment is important to the creative production of an employee in unique ways. Several of these attributes do not emerge as important to *learner* creativity, as presented earlier in this chapter. This suggest that workplace creativity research might possibly be transferrable to an instructional environment.

Environment	Element
Socio-Organizational	Challenging job Teamwork Task rotation Autonomy in job Coaching supervisor Time for thinking Creative Goals Recognition of creative ideas Incentives for creative results
Physical	Furniture Indoor plants / flowers Calming colors Inspiring colors Privacy Window view to nature Any window view Quantity of light Daylight Indoor physical climate Sound (positive sound) Smell (positive smell)

Table 2.1 Elements of the Work Environment that Can Foster Creativity. Table recreated based on Dul & Ceylan (2011, p. 14).

To summarize the third insight about the framework in Figure 2.7, workplace research appears to offer understanding concerning how contexts of the environment relate to creative instruction. Dul, Ceylan & Jasper's work is particularly of note. Their conceptual framework is somewhat similar to framework that emerged from this literature review, and they suggest two categories of detailed attributes about the physical and socio-organization environment that may relate to creativity. This suggests that the method for discovery to understand how context of environment relates to creative instruction might be enhanced by considering the attributes outlined in Table 2.1 as a strategy for coding and perhaps analyzing data.

Recommendations for Methodology

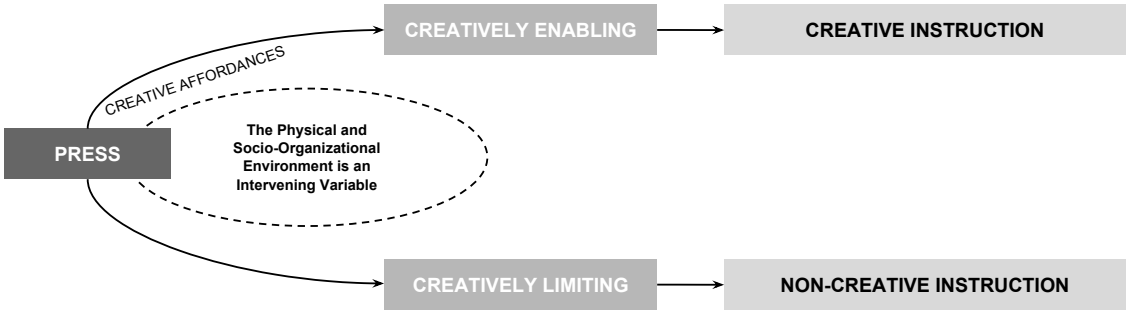
This research aims to understand how environmental contexts relate to instructional creativity. Using the Four-P approach to organize the existing knowledge reveals that creative instruction is a system, effectively defined using the Four-P construct. The exercise confirmed the gaps in understanding; knowledge about the creativity instruction and the environment are grossly deficient.

The results of the systematic review were used to suggest a conceptual framework based on existing knowledge (Figure 2.7). The framework suggests that "press" is an intervening variable in an instructionally creative system. The framework also suggests that "person" and "press" front load the system. The framework provided three insights relative to the research question. The framework provides significant insight about instructional creativity that can be used to guide this research and future studies. Discussion of the insight suggest that this dissertation research:

1. Can be explored by focusing on the parts of the system that have an immediate relationship the environment.
2. Should implement a research design that learns from teacher experiences of feeling creatively enabled and limited by the environment.
3. Might be enhanced by designing a method for data collection and analysis that considers the physical and socio-organizational attributes outlined in precedent workplace creativity research.

The three insights outlined above were used to modify the conceptual framework in Figure 2.7 to propose an Environment Model of Instructional Creativity (Figure 2.10). The model reflects the key components and relationships between those components that are important to the research question. They model discerns "creative affordances" as the relationship between press and a teacher being creativity enabled. Last, the model describes that that both physical and socio-organizational aspects of the environment are intervening variables.

Figure 2.10. Proposed Environment Model of Instructional Creativity



In summary, the literature review, the compilation and analysis of the conceptual framework, and the generation of the Environment Model of Instructional Creativity support three major recommendations for a methodology that is unique to this domain of research and yields discovery. Recommendations:

1. The most conclusive dimension of the Four-P system is person because creative ability can be measured using the TTCT (Torrance, 1988). Thus, this study should implement a research design that features measurably creative teachers. Participants should be selected for having a creative ability that is above a normative average. By selecting participants who are measurably creative, it no longer needs to be designated in the framework.
2. The least defined dimension of instructional creativity is the environment. Figure 2.7 suggests that the environment is an intervening variable that negotiates creative behavior. The literature does not provide comprehensive conclusions about the attributes of the environment that are creatively enabling and limiting. Thus, this study should implement a research design that learns from described instances of these experiences. A qualitative method is fitting because this research requires an approach that can "describe, interpret, verify, or evaluate" the phenomena." (Muratovski, 2015, p. 48), and required the focus to be on "context" that is "emergent and evolving." (Bloomberg & Volpe, 2012, p. 30).
3. The instructional process and product are defined in the literature yet are frequently identified in the literature for having an overlap or integrated relationship (Wendt, 1961; Sawyer, 2010; Zolfaghari et al., 2011; Tsai, 2011; Starbuck; 2012; Davies et al., 2004). The intent of this study is to identify context of the environment that relates to instructional creativity, whether process or product. Concerned with the environment-outcome relationship, this study need not decipher the instructionally creative process from product. By selecting participants who are measurably creative, it no longer needs to be designated in the framework in Figure 2.7. The framework is simplified in Figure 2.8.

The methodological approach presented in Chapter 3 is designed to generate knowledge that can address gaps in contemporary knowledge concerning the environment and instructional creativity.

Chapter III. Methodology

Overview

Contemporary research does not identify the contextual elements of the environment that concern instructional creativity. More investigations are required to improve our understanding about how environment enables instructional creativity. This dissertation asks: What aspects of the environment relate to instructional creativity? This study aims to approach answering this question in three ways:

1. Analyzing related literature.
2. Conducting an investigation that defines key attributes of the environment.
3. Conducting an investigation that delineates the role of those attributes in mediating instructional creativity.

The constructs of the Four-P Model of Creativity (Rhodes, 1987) were used to guide a systematic review of literature related to the topic. Rhode's model defines four creative dimensions known as the Four-Ps: person, process, product, and press. The review suggests that the Four-Ps of instructional creativity are not fully investigated. Knowledge concerning the environment and creativity in instruction are not well understood or defined (Figure 2.6). The results of the review were used to compile a Four-P Instructional Framework (Figure 2.7), to develop the Proposed Environment Model of Creative Instruction (Figure 2.10) that suggests the environment as an intervening variable, and to inform a method of discovery that can address the research question.

The knowledge concerning creative instruction and the environment is deficient and reflects trends in methodology that should not be repeated in this dissertation. The review recommends an approach that looks beyond the scope of learner creativity and the learning environment. The review suggests that the insights and experiences of creatives can be synthesized to define and describe the parts of a creative system. The gaps in understanding are addressed by a research design that makes measurably creative teachers the unit of study. This approach optimizes discovery.

The uniqueness of the following research design is three-fold. First, it makes teachers the focus of study. Second, it accepts that creative teaching benefits the learners, thus learners are not included in the investigation. Third, it accepts the assumption that pupils and professionals have a different relationship with the educational environment.

Rationale for Method of Approach

A research method is appropriate if the design for discovery is fit to answer the research questions. The goal of this research is to gain knowledge about the environment and creative teaching. Knowledge concerning this topic is deficient and requires in-depth research. Contemporary research does not identify how instructional creativity is enabled and limited by the environment. With little knowledge as precedent, this investigation requires a nascent approach.

A qualitative method is appropriate to explore this topic because it "focuses on context and is emergent and evolving." (Bloomberg & Volpe, 2012, p. 30). Muratovski (2015) describes the method as useful when the study needs to "describe, interpret, verify, or evaluate something." (p. 48). Creswell (2013) suggests that qualitative research allows discovery of meaning about "social or human problem" (p. 4), and that the adaptive structure of an inductive approach is particularly useful in revealing the meaning and importance of complex situations. The phenomenological genre of qualitative research is the most fitting for this study because it is concerned with the meaning of doing or experiencing something (Vagle, 2014; Muratovski, 2015).

The literature review in Chapter 2 suggests that using creative instructors as the unit of study will optimize discovery. Kafashpur et al. (2016) suggest, "Those people who are working within an environment are the ones best able to identify factors that affect their work." (p. 106). Logically, this research design uses a convergent parallel mixed method of discovery (Creswell, 2013). This method uses both quantitative and qualitative methods. The creative ability of participants is measured in phase one of study, yielding quantitative data. The results of the analysis are used as a selection tool for phase two. This approach allows a researcher to "converge or merge [the data] to provide a comprehensive analysis of the research problem." (p. 15) Both forms of data collected are used to interpret the findings.

Unit of Analysis

The expert authorities on the instructional environment are teachers. They complete a professional degree and obtain licensure to practice. They have first-hand knowledge and experience about the contexts, constraints, pressures and freedoms that exist when performing their job. *Creative* instructors can provide insights about the environment that address the research question because a creative "person" is a dimension of the Four-P Model of Creativity (Rhodes, 1987). In psychometric terms,

measuring creative ability is embraced as a conclusive science. Therefore, measurably creative teachers are the unit of analysis for this study.

Sample Selection

The participants of this study are full time instructors working in a private elementary school in an urban Midwest city, located in the United States. The sample school was selected because it is distinguished for high-quality instruction and because it has a reputation as a creative population of teachers. The sample school is relatively old and traditional in design. Selecting an older building minimized augmented perceptions about the environment and creativity that are often associated with new facilities (Engelen et al., 2016).

Elementary school teachers were selected because they often work with one group of students throughout the day. They also typically work from one classroom. Eligible participants were full-time teachers who had been teaching at the sample school for at least one full year. The full-time status ensures that the participants spend a similar amount of time in the building. The overall amount of time that the participants had worked at the school is important because of the breadth of experience that come with tenure. The research design set an arbitrary goal of 20 participants at the sample school for the first phase of study, and no fewer than five for the second phase. The design of both phases is described in detail in in the next section.

This method required working closely with school administration. The school principal was instrumental in advertising the opportunity to the teachers, expressing endorsement of the study, and communicating that the research is ethical. The administrator distributed the instructors with the invitation to participate to gauge interest of the instruction community (reference Appendix A). The invitation included a brief overview concerning the research topic, the voluntary nature of the study, the phases and time commitment, and details about a monetary incentive.

Overview of Research Design

This research employs a design for discovery that uses both quantitative and qualitative methods. A convergent parallel mixed method (Creswell, 2013) supports a comprehensive exploration of the research problem that responds to the recommendations that emerged from the literature review. The sections below describe the research design, defined by two phases to enhance discovery.

Phase 1: Measuring Creative Index

The purpose of the first phase of study is to select measurably creative participants. The design of this phase was informed by the gaps in knowledge revealed in Chapter 2 that suggest designing a method that looks beyond the scope of learner creativity. The review suggests that the insights and experiences of creatives can be synthesized to define and describe the parts of a creative system. The gaps in understanding are addressed by a research design that makes measurably creative teachers the unit of study to optimize discovery.

The TTCT is the most widely used instrument for measuring creative thinking (Cropley, 2000; Kim, 2006; Starko, 2013) with high validity (Cropley, 2000; Cramond et al., 2005; Kim, 2006; Althuizen et al., 2010; Starko, 2013). It is identified as a reliable assessment of creative ability for its predictive validity (Althuizen et al., 2010). The TTCT defines creative ability by primary dimensions of originality, fluency, flexibility, and elaboration.

Goff (2002) developed the Abbreviated Torrance Test for Adults (ATTA) as a shortened version of the TTCT. The ATTA takes only 15 minutes to administer including the verbal prompts, which is half the time required for the TTCT. The ATTA utilizes simplified versions of the figural and written/verbal of the TTCT. The resulting Creative Index (CI) score of the ATTA is a composite of criterion-referenced measures that include: provocative questions, internal perspectives, openness articulateness, and abstractness. The CI scores correspond to seven levels, defined by the distributive norms established by Goff (2002). The creativity levels are: minimal, low, below average, average, above average, high, and substantial. The ATTA is a convenient and time-efficient instrument that can be administered to both children and adults.

Cramond et al. (2005) suggest that the ATTA is an effective tool for screening creativity. A reliability test conducted by Althuizen et al. (2010) suggests that the ATTA measures fundamental aspects of a person that constitute their “creative ability.” Their findings indicate a predictive validity coefficient of $r = .59$ when the four sub-skills of fluency, originality, flexibility and elaboration are combined. Using the ATTA as a method for assessing creativity is more reliable than other tests that offer short administration procedures, such as the Abedi Test for Creativity (Auzmendi, Villa & Abedi, 1996). In summary, the ATTA is a reliable and valid means to measure the creative ability of a person.

Data Collection and Analysis Procedures

For its reliability, validity, and efficiency to administer, this study appropriated the ATTA as the instrument to measure the creativity of the participants. Eighteen instructors volunteered. The ATTA was administered in a common area of the school with minimal disruptions. Participants were first presented with a hard copy of Consent Form 1 (Appendix B). The document was read aloud to ensure understanding about the details and scope of the study, including the procedures and risks of participating. Terms of confidentiality were verbally emphasized prior to asking the participants to sign the consent form. Participants were given a $20 gift card to Target for volunteering to participate. The incentive was distributed after the consent forms were collected. The forms were later scanned, and a copy was emailed to each participant.

Reliability of the ATTA requires that strict procedures are followed which include verbal prompts and time limits. To ensure that these protocols were closely followed, the test booklets were distributed by controlled circumstances as directed in the ATTA manual. The test activities include writing and drawing. To ensure maximum time on each activity, pencils with erasers were provided to the participants.

Official scoring services are not available for the ATTA. The researcher scored the tests to determine the CI of each participant. The test package provides directions for scoring and examples as a guide. The details of scoring were familiar prior to evaluating the ATTA booklets. The test booklets were scored anonymously to minimize score bias. To improve the reliability of scoring, a random sample of the tests were anonymously scored by a colleague to assess agreeability of the scoring. No variance resulted.

Phase Two Selection Criterion

The ATTA scores were used as a screening tool to select participants for the second phase of study. Participants were selected if they scored a CI of >5, indicating a high (6) or substantial (7) creative ability. Of the 18 participants, nine were identified by this criterion. Three were selected to pilot the methods and protocols of the second phase. Six were selected to participate in the second phase of the formal study.

Phase 2: Responsive Interviews

Six participants were identified with a high or substantial CI from phase one and invited to participate in phase two (reference previous section). The purpose of the second phase of study is to interview creative instructors to learn about their insights

about and experiences with their environments. The participants who were selected were contacted by email and invited to participate in the interview process.

Teachers are busy professionals. Therefore, the participants selected in phase one were offered a $100 gift card to Target for volunteering to participate in phase 2. The incentive was distributed prior to interview. All of the teachers who were contacted agreed to participate.

On-site interviews were scheduled to avoid student contact hours, and to avoid interruptions. The interviews were conducted individually with each participant. Before the interviews started, the participants were asked to verbally consent to digital audio recording of the interview.

Prior to implementing the interview protocols, the participants were presented with a hard copy of Consent Form 2 (Appendix C). The document reminded the participants of what they had consented to during phase one of the study. The document was read aloud to ensure understanding about the details and scope of the study, including the procedures and risks of participating. Terms of confidentiality were verbally emphasized prior to asking the participants to sign. The signed forms were later scanned, and a copy was emailed to each participant. Also, an overview of the interview procedures was read verbatim prior to the interview (reference Appendix D) to ensure understanding.

Interview Procedures and Protocols

This section describes the interview procedures and protocols (Appendix E and F). They were developed prior to the formal study to ensure that they would enrich understanding concerning the topic of study. The details of the pilot are described in the next section (Pilot of Procedures and Protocols). The direct, responsive interviews were inspired by a phenomenological method that seeks knowing about the lived experience of the environment. The interviews were conducted in two consecutive parts: 1) semi-structured interviews in participant classrooms or primary work environments, and 2) open-ended interviews walking through the building.

The semi-structured, responsive interviews were guided by five questions designed for discovery. The first question seek understanding about the participant's constructs of creative instruction. The second and third questions are designed to learn about the experiences they relate to creative instruction, and the contexts that relate to being creatively enabled or limited. The fourth question seeks understanding about the resources the participants use to support and define their creative ideas, actions, and

behaviors as teachers. Finally, the fifth question seeks to understand the perceptions that creative teachers have about the environment. The fifth inquiry specifically presents the word “job” to encourage the participant to focus their thinking on their creativity (rather than the learners’). The following are the protocols for first half of the interview.

1. *What does creative teaching mean to you.*
2. *Tell me about a creative teaching moment or experience.*
3. *Describe an experience of feeling creatively limited when teaching.*
4. *Tell me about a creative lesson that other teachers have borrowed from you. What made it creative?*
5. *Describe the importance of the environment to doing your job in a creative way.*

The walking interview was designed to utilize the environment as a rich data gathering method. This encouraged participants to share experiences with and perceptions about the environment, and to promote the generation of descriptive data. The open-ended walking interviews consisted of two open-ended questions. The questions were designed to inspire participants to describe relationships between their creative experiences and the environment. The questions seek understanding about the contextual importance of the places that enable and limit creative instruction. Both questions suggest prompts and follow-ups to guide the dialogue, and to keep it focused on discovery that relates to the research question. The following are the protocols for second half of the interview.

6. *Show me a place in this school that you've experienced creative teaching, or a place that inspires you to teach in a creative way.*
    a. *Activity: Go there and listen to what they say about it. What they say on the walk is as important as what they say at the place.*
    b. *Prompt: Ask them to talk about why they chose the place (place numbered sticker(s) when possible on the place or thing described and ask them to describe number [blank] identifies and why it is important).*
    c. *Follow-Up: If they do not have a place to share, ask them to share what kind of place would inspire them to teach in a creative way.*
7. *Show me a place in this school that you’ve experienced feeling creatively limited as a teacher.*

a. *Activity: Go there and listen to what they say about it. What they say on the walk is as important as what they say at the place.*
b. *Prompt: Ask them to talk about why they chose the place (place numbered sticker(s) when possible on the place or thing described and ask them to describe what number [blank] identifies and why it is important).*
c. *Follow-Up: If they do not have a place to share, ask them if there is a place in the school from which they would not want to be assigned to teach.*

Documentation procedures were implemented during the walking interview which included digital audio recording and the collection of field notes and observations during and after interview. As an added method to record the event, photo documentation procedures were implemented to capture the contexts (the places visited and things with numbered stickers) that emerged as important on the walk. After the interview, the places and things were photographed in number sequence and retrieved. The documentation was used to facilitate the interpretation of the descriptive data and to reference during the coding process. To keep the digital photos organized for later review and to ensure that the photographs were matched correctly to participants, each of the six instructors were assigned a unique sticker color.

All digital files were managed immediately after each interview. The audio files were named with codes to match the participant master database. The photographs from the tour were renamed to match the participant identification codes corresponding sticker numbers. When multiple photographs represented one sticker, the files were named with additional indicators. This system kept the photographs organized in a series. Field notes and observations were scanned as digital files and securely disposed. All documentation was securely stored on a password protected computer.

The interviews were transcribed within two days after each interview using a secure, online transcription service. The service returned the transcripts as a digital Word document. The files were named to match participant identification codes and securely stored. Each transcript was reviewed multiple times while listening to the audio recording and viewing the photograph files and the field and observation notes. This process enabled corrections and to insert the digital photographs and field notes in-line with the transcript text.

Pilot of Procedures and Protocols

The formal interviews described above were preceded by a pilot study. The pilot was designed to develop the interview protocols to ensure that they would enrich understanding concerning the topic of study. The method of a walking interview was *inspired* by the work of Thoring, Luipold & Mueller (2012, 2013) and Thoring et al (2015). They've developed a broader understanding about the environment and creative learning in design education through their use of "cultural probe kits." Their findings suggest space as an effective "source of stimulation" and capable of capturing a broad array of perspectives about creativity (Thoring et al., 2015, p. 3).

Three participants from phase one were the units of study for the pilot. The pilot included trial of all methods described in the previous section, including the procedures for contacting the school administrators, obtaining consent from participants, and providing incentives. The exception was the incentives; participants were offered $30 to volunteer for interview instead of $100. All three teachers who were invited to interview agreed to participate. The participants of the pilot were not eligible to participate in the formal study, and the descriptive data collected are not included in the analysis.

Data Analysis Procedures

An inductive analysis was used to analyze the descriptive data collected during interview. Thomas (2006) suggests that a general inductive approach is a reliable systematic procedure that is simple and efficient for emergent investigations. The procedures are effective for condensing descriptive data, and for structuring experiences into the development of a framework. Thomas suggests that the approach is useful for "deriving findings in the context of focused evaluation questions." (p. 237).

The procedures for the inductive analysis followed the steps recommended by Thomas. The data files were formatted, and then securely backed up. Printed transcripts were reviewed for familiarity and to understand the broader ideas represented. This involved writing notes and short-hand codes on the margins of the printed transcripts which supported formulating the initial themes related to the research question. The transcripts were reviewed over and over again to identify additional text of relevance, to make additional notes, and to refine the initial codes.

Themes were loosely developed to include upper-level categories that respond to the research questions. Lower-level categories emerged from reading the transcripts multiple times, reflecting on rich passages, and making notes on the printed copies. Once a general structure of upper-level codes was developed, the files were loaded into

NVivo, a Qualitative Data Analysis program that allows digital interaction with the transcripts.

The coding process encompassed two first-cycle coding methods: “grammatical” to define the attributes of the environment that relate to creative instruction, and “elemental” to describe the role of those attributes (Saldana, 2016). Attribute codes “log essential information about the data.” (p. 82). Descriptive codes “assign basic labels to data to provide an inventory of their topics.” (p. 97). To capture the larger picture and answer the research questions, concept coding is used to as the second-cycle coding method to formulate the big ideas that emerge from the data through the attribute and elemental coding process.

NVivo facilitated the first-cycle analysis by tracking the codes, nesting the codes into families, isolating codes across all participant responses in the repository, and entering customized attribute indicators. The passages were interpreted for contextual importance to the research questions, noted for frequency of responses, and noted for the degree of commonality among participants.

The decision to include the two methods for the first-cycle coding emerged from Saldana’s recommendation that often “two or more are needed to capture the complex process of phenomena in your data.” (Saldana, 2016, p. 69). The decision to employ these methods were driven by the research question: What are the attributes and role of the physical environment to instructional creativity?

The inductive analysis resulted in developing a wide-range of lower-level categories. NVivo revealed overlaps and redundancy of codes. This refined the categories and sub-categories, and facilitated the selection of key passages that represent knowledge concerning the research questions

The broad goal of the coding process was to define broad categories and expand on the properties and attributes of each. This required repeat review of the data, and accepting that it is a dynamic, immersive process. Codes emerge and combine, clusters shift or overlap, and new relationships emerge. The process of analyzing the data continued until thematic saturation was reached; no new concepts, categories, or properties emerged as relevant to the research question.

Issues of Trustworthiness

The methodology of this study is informed by Thomas (2006), Bloomberg & Volpe (2012), Creswell (2013), Luft & Overgaard (2013), Vagle (2014), Saldaña (2015), and Muratovski (2015). The procedures and protocols were refined by an in-depth pilot

study, designed and conducted with the goal of ensuring an approach fit to answer the research question. Advising with experienced colleagues assisted in formulating meaningful questions, evaluating interviewing techniques, and resulted in recommendations for refining the methodology and procedures of this study. The results of the pilot study indicated that the methodology is valid and reliable, producing descriptive data that answered the research question.

Several strategies were implemented to introduce rigor to the coding process and to ensure conclusive findings. The procedures are repeated multiple times to achieve thematic saturation. Dependability was addressed by means of journal and record keeping, by soliciting feedback from colleagues in regard to coding and data analysis methods, and by providing detailed descriptions when and if possible.

Credibility is arguably an issue with the sample size of participants. Credibility begins by properly matching the research question with an appropriate method to optimize discovery. Finding a match for this study was accomplished by designing and conducting the pilot study. The study was designed to measure the Creative Index of participants form one school and to collect descriptive data from a creative portion of that sample. While it is reasonable to assume that more participants will support thematic saturation, the pilot study was comprised of only three creative teachers and resulted in findings that addressed the research question.

Issues of credibility extend to the handling and coding of the text data. The descriptive data was interpreted by the researcher for meaning. Clarifying researcher biases addressed credibility issues with this. Another measure to improve credibility was to incorporate the overlay of field notes, observations, and photo documentation to reference during the data analysis. This welcomed the discovery of challenging data that may present discrepant findings. Additionally, frequent peer review sessions with colleagues provided insight and alternative perspectives.

Ethical Considerations

"Researchers are morally bound to conduct our research in a manner that minimizes potential harm to those involved in the study" (Bloomberg & Volpe, 2012, P. 111). This research design aimed to practice a high degree of sensitivity. Investigations related to education generally require accounting for an array of sensitive stakeholders. This research was guided by a doctoral advisor, who consulted the Institutional Review Board (IRB) application and process. Advisor supervision ensured compliance and sensitivity. The study was approved by the Institutional Review Board (IRB) to

investigate human subjects and ensured the subjects as a non-vulnerable group. The data collection procedures were designed to engage exclusively with consenting adult participants and the administrative staff best positioned to facilitate the coordination of interviews in the sample school. To ensure participant awareness of the conditions and risks of the study, participants were presented with a hard copy of consent forms and read the documents aloud. Participants were required to read and sign the consent forms prior to participating with all phases of this study. Confidentiality measures are implemented throughout, as reputation can be an important factor swaying the public views of schools, its employees, and the practices therein. The confidentiality measures included protecting the identity of the participants, the sample school, the name of the school district, and the geographic location.

Obtaining IRB approval required obtaining written consent from the school district of the sample school and complying with their organizational procedures. It also included obtaining consent from the administration of the sample school and working with them to establish an appropriate procedure for soliciting participants.

The IRB approval for the parent study is provided in Appendix G, and an addendum was filed to include the formal study.

Limitations of the Research Design

When researchers are assigned the role to interpret information, and allowed the freedom to construct meaning from it, there are always inherent limitations. This study acknowledges the importance of identifying biases and assumptions of the researcher, especially as they relate to creativity, creative teaching, and the instructional environment. These biases are considered in the research design and also exercised throughout the process of interviewing, communicating with participants, coding, interpreting, and in reporting on the findings. Taking these precautions minimize questions of legitimacy.

This research explored a content area that the researcher has experience with both personally and professionally. The experience and knowledge is utilized in making decisions about designing a study aimed to discover the relationship of the environment to creative instruction. This knowledge was used to conceptualize a representative sample group and school, and to devise interview protocols and methods.

The findings of this study may be questioned for the limited number of participants, and because they were selected from one sample school. A broader sample may result in revealing more details about the contextual elements of the school

environment that relate to creative instruction. The demographics of the sample may lack variability (i.e. age, gender, teaching experience, Creative Index, specialty areas, grade taught, etc.) that could be of importance to answering the research question. The amount of time devoted to conducting the interviews could also be of importance if a participant felt stressed by the time the interviews took to conduct, the style of interviewing, the number of questions, or the nature of the questions.

Implementing additional approaches may have helped triangulate the findings. Strategies that may have helped enhance data include conducting follow-up interviews, interviewing participants in groups, and conducting additional studies that include observational or and ethnographic approaches.

Last, the data analysis procedures in phase one might be a limitation of this study The Abbreviated Torrance Test for Adults or ATTA (Goff, 2002) is a pencil to paper test that requires scoring by hand. Professional services for scoring the test are not available. The testing packet comes with clear instructions and examples. It is important that evaluators of the test are familiar with the procedures and have experience scoring. ATTA is a valid means to measure creative ability and to predict creative performance (Althuizen, Wierenga & Rossiter, 2010). However, the scoring is subject to human error and interpretation. Thus, it may present limitations or questions of error. If the participants were identified with a creative ability as “high” or “substantial” in error, their responses to the interview questions may not answer the research question. The research design aimed to minimize the possibility of scoring error by having a colleague individually score a random sample of the tests. No variance of scoring was detected.

Summary

This research implemented a mixed-method approach to discover how the environment enables and limits creative teaching. Two phases of study were used to enhance discovery. The data collection methods are summarized in Table 3.1.

Table 3.1 *Overview of Data Collection Methods*

Approach	Collection Method	Type of Data	Purpose
Quantitative	Creative Index	Numerical / Scale	Identify participants for interview (a selection tool)
Qualitative	Interview (classroom)	Descriptive	Gather perceptions about creative teaching experiences
Qualitative	Interview (walking)	Descriptive	Gather perceptions about creative experiences + environment

For the first phase, creative instructors were selected by using the Abbreviated Torrance Test for Adults to determine their Creative Index or CI (Goff, 2002). Nine participants with a "high" or "substantial" CI (> 5 CI on a scale of 1 to 7) were identified among the 18 phase-one participants. Three were selected for a pre-dissertation pilot study to test the qualitative methodology for phase 2. Six were selected to participate in the second phase of the formal study.

Two semi-structured, responsive interviewing techniques were implemented. Participants were first interviewed in their teaching space, followed immediately by a participant-led, walking interview through the building. The walking interview was designed to utilize the environment as a rich data gathering method. This encouraged participants to share experiences with and perceptions about the environment, and to promote the generation of descriptive data. The data was interpreted, coded and analyzed to identify aspects of the environment that they perceive as important to creative instruction.

This research was not intended to evaluate a causal relationship between the environment and instructional creativity. It was not an exploration of educational or developmental psychology. Rather, this work synthesized the experiences of measurably creative instructions to broaden knowledge about instructional creativity as a system in which the environment plays a distinct role. The research design was rigorously developed to address the topic. The findings of this methodology are presented in Chapter 4.

Chapter IV: Findings

Overview

What aspects of the environment relate to instructional creativity? This study aimed to answer this question in three ways. First, by analyzing related literature. Second, by conducting an investigation that defines the key attributes of the environment. Third, by conducting an investigation that delineates the role of those attributes in mediating instructional creativity. Creative instruction impacts learners in a positive way. Instructional creativity is linked to effective teaching that enhances learning (Sawyer, 2011; Reilly et al., 2011; Rinkevich, 2011), and promotes creativity among learners (Nickerson, 2010; Horng et al., 2005). Understanding the effect of context on teaching professionals is essential.

Constructs of the Four-P Model of Creativity (Rhodes, 1987) were used as an exploratory beginning to answer the research question. Rhode's model was selected because it is widely used to understand creativity in non-educational work environments where creative performance and outcomes are desired. While the Four-P Model is popular in creativity research, it has not been used to understand creative instruction. Rhode's model defines four creative dimensions also known as the Four-Ps: person, process, product, and press (environment, place). This study used the Four-Ps as a way to systematically review available literature related to creative instruction, and as a method to reveal and confirm the gaps in knowledge.

NVIVO software was used to organize the relationships between the Four-Ps of creative instruction and to establish how they are defined for instruction. Using this method to organize the existing knowledge revealed that creative instruction is effectively defined using the Four-P construct, and that the Four-P model is fitting to explore this research topic. The literature to date indicates that the Four-Ps of instructional creativity are not fully investigated. The attributes and role of the environment to creative instruction is the least understood and defined. The results of the systematic review were used to generate a visualization that summarizes the knowledge about creative instruction (Figure 2.6), to develop a Four-P Framework of Instructional Creativity based on the existing knowledge (Figure 2.7), and to develop the Proposed Environment Model of Creative Instruction (Figure 2.10). The systematic review informed a research design where the creative instructor is the subject of study.

The mixed-method research design was implemented in two phases to enhance discovery. For the first phase, creative elementary teachers were selected by using the Abbreviated Torrance Test for Adults to determine their Creative Index or CI (Goff, 2002). Nine participants with a "high" or "substantial" CI (> 5 CI on a scale of 1 to 7) were identified among the 18 phase-one participants. Three were selected for a pre-dissertation pilot study to test the qualitative methodology for phase two. Six were selected to participate in the second phase of the formal study.

Two semi-structured, responsive interviewing techniques were implemented. Participants were first interviewed in their teaching space, followed immediately by a participant-led, walking interview through the building. The walking interview was designed to integrate the environment as a creativity-probe. This encouraged participants to share experiences and perceptions about the environment, and to promote the generation of descriptive data. The data was interpreted, coded and analyzed to identify aspects of the environment that they perceive as important to creative instruction.

The knowledge that emerged from this study represents the insight of creative elementary teachers who shared personal experiences of feeling creatively enabled or limited in planning and performing creative instruction. The six contributing participants are identified in the findings as T01 through T06. The discoveries are organized within three major findings. The first is multifaceted; defining the attributes and role of the environment that emerge as important to creative instruction. The second demonstrates that the attributes of the environment that relate to creative instruction are interrelated. The third indicates that the organizational environment is dominant and negotiates instructionally creative behavior. The findings are presented below and discussed in Chapter 5.

Finding 1: Physical and Socio-Organizational Attributes of the Environment Enable Creative Instruction. *100% of participants shared experiences that describe how the environment supports their creativity. Supportive context is multifaceted and includes physical and socio-organizational attributes.*

Finding 1a: Creativity Enabling Attributes of the Physical Environment: Creative instructors perceive furniture and interior finishes and building architecture as creatively enabling aspects of the physical environment. The importance of furniture and interior

finishes to creative instruction is four-fold, allowing teachers to personalize, organize, and reconfigure the space, and to display thinking. Architecture is important because it determines the space proportions and the connections that the instructional environment has with natural elements outside the building. Aspects of each of these categories are identified and illustrated in the following sections.

Furniture and Interior Finishes

Support to Personalize

Creative instructors perceive that their creativity is enabled when they can personalize the instructional environment. All of the participants described experiences of personalizing the environment by manipulating the existing furnishings and interior finishes. Several participants described that the act of personalizing often involves designing unique instructional artifacts to embellish their environment or provide functional support of an activity.

Creative instructors describe the act of personalizing furnishings and finishes as an inherent aspect of stimulating *learner* creativity. T02 explained *"I think the environment has to work for the kids first and foremost, because if they can't be creative, then why are we doing this -- so chances to personalize for the kids and choices that they can have is, I think, part of my job, to offer-- or have those opportunities be available."* T03 suggested that they used the instructional environment to send learners a message, *"'Hey, you're welcome here. This is all for you. How can you use all of these to do your job? How can I help you use all of these things to do your job?' Without [personalizing] environment, it would be hard."* One of the participants described the act of personalizing as something unconscious. T01 described it as simply "*enjoyable,*" and something that emerges from a natural inclination to ask, "*Wow could we do this better?*"

However, all of the participants of this study described in detail how personalization involves *more* than just modifying what's there. It often involves designing and generating unique instructional artifacts and sometimes completely changing the physical space.

As a protocol intended to stimulate discussion on the walking interview, participants were asked to identify one place in the school where they repeatedly experienced creative teaching moments. Repeatedly, the participants highlighted an association between their creativity and developing physical items for their instructional space. T06 identified a small space they had defined using rugs, shelving, lighting, and

other artifacts. They described the space as, “the peace corner,” defined as “a little private kind of cove.” that encourages students to reflect and write.

T06 talked in great length about the role that personalizing the furnishings and finishes play in enabling creative instruction. They explained,

> *I'm always creating…. I love just making everything for the classroom, like that beginning of the year when you're setting up your room for the new group of students, that's-- I love it all, but that's one of my favorite parts because you get to start over, get to hit the reset button, and get to make your class the way you want. So, making all of the labels on the bins, and making all the word wall, and making the signage, and the birthday chart, and the months chart, and that kind of stuff. That was so fun… and my partner was so open to be like, " Let's strip it down, let's start over.*

What T06 shared demonstrates that for creative teachers, personalization of the instructional spaces goes well beyond just modifying the existing furnishings and finishes. T04 identified a large wooden storage unit on wheels that they had personally designed and built with the help of a colleague. T06 described how they conceptualized, designed, and generated original finishes for their room. They described the process as an annual ritual. When asked to share more about personalization and their creativity, T06 offered insight into how creative instructors might view the furnishings and finishes of their environment differently than others.

> I think some teachers are happy kind of purchasing things from the teacher store and putting on the wall and calling it a day, and I like making my own. Everything here, we made on the computer and laminated ourselves. We didn't buy this stuff. I don't know, it just feels more personal… If you make it yourself, it's more personal. And I think, I don't know if this is going to sound kind of dippy but I think that when you care about what you made then that care radiates. Hopefully. I guess I like to think that. Then the environment shows that to the kids and to anyone else that comes in that they cared enough to make it this way.

T06 explained how annually refinishing the instructional space is creativity inspiring because it keeps the space fresh and dynamic. This emerged with other participants as well. T02 shared, “*I'm kind of a believer in starting over every year… [the] tool goes up, and then it goes away.* T04 also implied the importance of this when asked to identify a creativity limiting space. Describing the room as lacking a personalized touch, they said, “*The same posters have been on the wall. They never change.*”

Another participant had a lot to share about the relationship of personalization and their instructional creativity. When asked to share a creative lesson that other instructors had borrowed from them, T02 pointed to a wall in their classroom. The wall featured original posters they had generated that students could then interact with sticky labels. When asked to talk further about their creativity and the wall, they shared that it felt creative because of the "*visual nature of it."* The connection between creativity and personalization emerged as important to T02 in other ways as well. When asked to identify a place in the building where they had a creative experience or were inspired, they identified a space in their classroom defined by a table of artifacts. Most of the artifacts belong to the participant and were associated with interesting personal stories. They describe the space as creative because of the impact that it has on the learners. When asked to talk about it, they shared,

> *Adding to the space, and some of it's kind of seasonal, and sometimes I'll just plunk it down and I'll wait for the kids to say, "What's this?" And then we'll say, "Oh, did you see that there's that nest I brought in [laughter]?" And, "Was this real?" And then there was kind of a story behind it, because my cat had found it in the fence in my backyard, and they know my cat because I've talked about my cat a lot [laughter]. But yeah, those kind of little things that we'll add. I think every kid is intrigued by tiny little treasures. So, it's just like, I don't know, just that time to be reflective and quiet. And I just think kids get inspired by those quiet moments of just playing and exploring. And I do… It inspires me to think about what they mean. And also, because I have those same inclinations, but also knowing that they can have that little moment of, "It's okay to play and touch." And I think more learning happens when you're not just nose to the grindstone, the whole seven and a half hours, or whatever, that you're here. That you have those moments of stepping back and looking out the window or holding something in your hand and just thinking. And you need those breaks between all the rigor for learning to happen.*

T05 identified a creative, very small nook in their room. The nook was defined by shelving that was filled with artifacts. They explained that they had personalized the shelving to serve as a "museum," featuring personal artifacts for the learners to touch and engage with. T04 described their classroom in a way that suggested it as a big museum, embellishing shelves and surfaces with personal artifacts. They described it as creative inspiring to them because,

> *Everything that's in here, I put here. I mean, literally, I guess what makes it special is it's like my second home, and a lot of the things that are displayed around are either things that I've brought from home or collected over the years.*

Personalization was one of the most discussed aspects of creative instruction among the participants. T01 provides the final illustration of how it emerges as inspiring and enabling. When asked to what place in the building they had creative inspiration or experiences, they identified a classroom of another instructor. They described how they were inspired by how intently their colleague had personalize the furnishings and finishes of their space. They shared,

> *[The teacher] who did most of the decorating is really creative. She's very crafty. She makes a lot of-- she does a lot of sewing […] She probably made these pom-poms. She made all the pennants. And she has very clear ideas of how she likes to organize her room. She said she doesn't like primary colors, so there were a lot of things in here that were red, yellow, and blue that she got rid of and found these different patterns of-- the papers that were on the pennants are very specific patterns from designers that she likes, which you wouldn't notice. I think even there were some things like this that she painted. They were paper like banker's boxes that she actually just painted over the summer because she couldn't stand that they were blue, like royal blue, which you might not immediately realize or notice but just from knowing her.*

Support to Organize

Furnishings and interior finishes provide a creative instructor with organizational support. Five of the six participants shared experiences that suggest that creative instructors perceive the ability to organize their space and its contents as creatively enabling. Doing so supports and environment that is effective and “very fluid.”

Several participants had stories that illustrated the role of organization support and creative instruction. From supporting a “very creative and inviting space,” to generating an environment where “the resources are in places that are easy to get to, and readily available.” T05 described “rethinking a lot of organization pieces” as an ongoing activity to finesse their instructional environment to be “efficient.”

Creativity and learning is often thought of as messy. Creative instructors identify that the messes that occur with learning are not necessary inspiring to them. T04 shared,

> *I'm a very organized person. I do like things neat, but I don't mind kid mess, and I don't mind their stuff, and I don't mind-- I just don't like my stuff [laughter] all over the place. I am a visual person… so I feel like there has to be a lot of the visual stimulus. But, not too much. I mean a lot of visual stimulus that is organized.*

Of all the participants, T01 had the most to share about the impact that organization has on enabling and limiting their creativity. When a space is unorganized or "*cluttered*," they described it as "*stressful*." When asked to identify a space in the building that they felt creatively limited, they zeroed in on a space that they found annoying for its lack of organization and "*chaos*" and "*visual distractions."* When asked to talk more about the relationship between the identified chaos and their creativity, they shared,

> *For me, they're very related. I feel like when my classroom is messy and there's just stuff all over the place […] It's harder for me to plan creatively because I'm distracted by all the mess, or I'm looking around going, "Oh my gosh, we have to organize our cubbies," or "Oh, I really need to think of a better way to do that," and I can't get into a space where I can't be a creative teacher. Yeah.*

T01 also shared how creatively inspired they are by an organized environment because it pays dividends to the fluidity of their job and help make it easy to navigate. They equated a fluid environment to that of Target where you "*know where to find things*," and "*know exactly where you need to go*." They said, "*I think that's super important because if you want to focus on the teaching, you can't be wasting a bunch of time on the other details."* When asked to talk more about the relationship of creativity and navigation, they shared,

> *Organization is a really big part of being able to do my job well… I don't like to waste a lot of time on things like that. So, at the beginning of the year, teaching all those procedures and making sure that I've done my part to make the room easy to navigate, then it saves a lot of time so that you can do more interesting things with your teaching.*

Organization extends to broader space planning for creative instructors. In talking about the organization of the instructional environment, T01 unexpectedly shared how the arrangement of the room served the students, but not necessarily them. Talking about a space where students had to sit and listen quietly, they shared, "*Usually if they're over there sitting and listening, then I'm the one talking, so I might be presenting things in a more interesting way. And then if they're over here doing creative and independent work, I'm just facilitating and managing behind the scenes, checking in*."

Flexibility to Reconfigure

Reconfiguring furniture is believed to enable teacher creativity. Several creative ideas are developed outside of the classroom or at the last minute, and the environment needs to be quickly and easily adaptable. Five of six participants shared how flexibility of furnishings in their environment are important to creative instruction. T04 captured the scope of importance, sharing, "*I feel like a creative environment has to be flexible… I might just come to school one day and say, 'I think we need a star-shaped thing,' or, 'I want to set up [an activity] in the middle,' and then I'd put all the tables kind of surrounding that. Or kids stand up, and I push all the tables so that everybody can be facing that way."*

T03 shared how the flexibility of their space creativity inspires and enables them. When asked to describe more about their experience they shared that they had created all of the "spaces" within their classroom. When asked to share more about it, they said their space is "*very fluid*" and "*made to do big moving things*." They shared how they had created variety of spaces throughout the classroom using furnishings and other movable items. One of the spaces they identified was a quite smaller area they made to allow students to get away and do private thinking. When asked more about the process of developing these areas, they said "*When we come in, it's a big empty room. We have tables, we have chairs, but then it's really up to us and the kids to move things around, how it works for them and how it works for us.*" Similarly, T05 shared how creative instruction means including the learners in the process of reconfiguring the environment, saying, "*Sometimes, I've asked kids, 'What do you like? How do want me to move the room around*?'

T05 described flexible furnishings as an important and dynamic part of creative teaching. When asked what a creative aspect of their classroom was, they replied, "Flexibility." When asked to share more, they said,

> *Flexibility is having wide-open spaces where the kids can roam. That's why I like to be able to move things around. I have that board that's got that calendar on it and sentence-- Sometimes I need it. Sometimes, no, get rid of it. Move it over here. Sometimes, what I do, I have a cart in there, I move it right next door.*

The need to reconfigure furnishings is described as an instructional necessity to support creative ideas and activities. But, some participants described how reconfiguring the space is inspiring because it keeps the environment fresh and new. T04 shared "*You get tired if you have things always the same way.*" They shared that they simply like to

"*change it up,*" and equate it to "*remodeling*." T02 expressed a similar need for a dynamic environment, sharing, "*I try to make-- I think the room-- I don't want it to be just sort of the old faded stuff that just stays up."*

Support to Display Thinking

Furniture and interior finishes that exhibit the ideas and thinking behind both learning and teaching activities are perceived as creatively inspiring and enabling. All of the participants identified that furniture and interior finishes that support displayed thinking are important to creative instruction. Vertical display surfaces are the most important and include the ability to use both the wall and ceiling. However, horizontal surfaces that exhibit ideas and thinking are also associated with instructionally creative experiences. Displaying ideas emerged as so important that creative instructors will find ways to display work and ideas even when the surface to do so are limited. T04 called finding such opportunities as, "*Economizing on the space that's available*" when describing how they added hooks to a vertical surface of a furnishing in their room to display projects because "*it's a space that is available.*"

The association of creative instruction and surfaces to display thinking was especially evident on the walking tour, when participants were asked to identify a place they had experienced being creative. Most identified areas in their own classroom. T06 identified a wall in their classroom. When asked to describe the area, they said, *"[This is] a wall in our classroom where there's a clip for each child that has a picture of their face, and we rotate different work that they've done, kind of a showcase, a space to show off their work.*" T03 also chose areas of their own room, identifying the room as inspiring for its light and high ceilings. Looking up, anyone could see that the participant had hung a variety of visual items from the ceiling.

T02 had a the most descriptive instance of creative inspiration from displayed thinking, and in their instructional space. They identified a wall of displayed writing by their students and explained how the wall was set up as a sort of repository of autonomous student works. In the discussion about their creativity and the display, they asked the question,

> *Would the kids do this kind of writing if there wasn't a place to put it? Or now that it's there, and they've seen each other's, are there kids who now are like, "Well, I'll put something on that board and I'm inspired because so-and-so wrote, and it wasn't assigned, and it was just something I did at home or something I did during a free writing time?*

As a powerful response to their own question, they remarked, "*Maybe they wouldn't have done it if not for the space, and sort of the acknowledgment of this is valid."* When asked to talk more about the display and their creativity, they shared,

> *I do think-- and not having just the physical space to do this, or the time, or sort of that freedom. Again, this doesn't necessarily meet any particular standard or anything. It just sort of happened. And I do think it-- having this space, and creating this, has helped me sort of recognize the value of letting the kids just write.*

While surfaces to display thinking are important to creative instructors in their classrooms, it did emerge as important in hallways as well. T03 remarked while on the walking interview, "*Even in these hallways, I feel like I'm inspired often. Our art teachers are incredible at keeping the walls new, and fresh, and changed."* T05 added,

> *The whole hallway is filled with the artwork… So that's how ambiance is important and having bulletin boards that you can display… We can't take them down. We love them so much [laughter]. We tried to put up a new bulletin board [laughter]. That's why I got another one here because the kids say, "Oh, no, don't take them down."*

And, T02 provided perspective as well. They shared how they relate their colleague's passion to the displays halls, in remarking,

> *Everything is so authentic and real and not just from a package. I don't know, it just feels like it's coming from a place of real passion and interest on the part of the person who's teaching it. So, you see that walking through the halls, and hear it.*

Building Architecture

Proportions of Space

The architecture of a building typically prescribes the proportion of spaces within. Architecture components generally control what the area of a room can be, and the height from floor to ceiling. All of the participants of the study eluded to the importance of space proportions to enabling creative instruction. However, two participants were the most descriptive about the impact that the size and height of a room have on their teaching.

On a positive note, T02 described how the size of an instructional space has an impact, sharing, "*If it's big and has windows, I could be happy […] I feel like that that kind*

of a space could always turn into a beautiful creative space for me." T01 shared this perception as well, equating the size of space to exciting possibilities. They shared, "*I feel like with all the open space, you have more room to be creative… it gives you the room to do whatever you want."*

The impact of space size and creativity are reflected in the participants' experiences. And they were often negative. When asked to share a space in the building that is creatively limiting, the walking interview arrived at a small space with low ceilings. T01 shared how the room, "makes me crazy." They described, "*The ceilings are low. When the kids are all in here, it's really loud. It's really crowded… there's usually people bumping into each other all the time… The lowness of the ceiling means that the noise is so contained in here. It's super loud in here.*"

Connections to Nature

The architecture of a building typically dictates the frequency and location of exterior windows, how much natural light streams in, and the proximity and ease of access to outside. Most of the participants identified connections to the outside of the building. However, the specific attributes of importance to creative instruction varied among them. Three out of six participants identified daylight as creatively inspiring. Two out of six identified the views outside as inspiring. Two out of six identified access to outside as creatively enabling *and* inspiring.

While a "*lot of windows and wonderful sunshine*" (T04) were most commonly identified as important to the participants, views and access to the outside resulted in more descriptive instances of inspiring creativity. Creative instructors value the ability to simply *see* outside of the building through exterior windows. T02 provides and illustrated account of this inspiration.

> *Coming here, this room with windows on three sides and the sort of accessibility to nature, just seeing it. And we'll see hawks, and squirrels, and woodpeckers in our trees. And the changing of the seasons is so right there, the glow in the autumn when it's yellow right out our window. I mean, and the weather and the air. We open the windows, and just that-- to me, that is really inspiring. And if you want to read, or write, or draw, or be creative, to have that just in your field of vision is so-- I need that to be creative.*

In addition to having visual access to natural elements outside the building, the issue of physical access for instructional purposes was also identified as important. Having outside access enabled T04 to utilize an unused space outside a window to

support a year-round instructional activity, featuring a miniaturized village that the learners had created. When asked to share the most creatively inspirational space in the building, T05 instead identified an area outside that they described as creatively inspiring for being "*simple.*" Upon walking outside the building, they identified the space as a "*big grassy knoll,*" with an outdoor theater on the perimeter. The participant emphasized that an important aspect of the outdoor space was that "*It's just right next door. It's right next door to my classroom*."

T02 communicated a very strong response to the combination daylight, views, and access to the outside. They described in detail how "*just the proximity to nature*" supports an instructional space that is inspiring and full of opportunities to be creative. On the walking tour visiting the space they found the most creatively inspiring, the participant tagged an exterior window with a sticker. When asked to describe what they had tagged, they shared:

> *… just that sort of natural light and beauty that's there all the time. And that access to nature, whether it's seeing it, smelling it, hearing it. Every now and then we'll make a decision to go outside because we'd see something, or we want to be out there. We want to read or do something outside, we'll go. […] It's an inspiration. It's a setting. I feel like it's sort of a mindset, almost. Or it gives that-- I think just access to beauty and nature, I guess it's inspiring. And to see that change as the day goes on, as the seasons go on, to me that's-- I don't know if I can even really describe it in words. It just feels like-- There's just like an openness or a like, "Look at this beautiful world that we are a part of. Look at how the light is streaming in and laying a big square of sunshine on the floor that I want to lay in and draw." I mean, it just inspires and reminds us of some-- just like the core values that we all hold. I think when we're studying science, or when we're writing, or we're reading poetry it's like, well just look right out there. This is what we're talking about. This is what we're feeling and-- so I think a lot of it is just inspiration and just setting up that feeling of like, "What can I do? I just feel like I want to add to the beauty of this place or something.*

T02 also communicated that when exterior windows are lacking, creative teachers feel limited and oppressed by their space. In talking about a previous instructional environment without exterior windows, they said:

> *I've been in windowless classrooms. There was no beauty. I mean, people tried to make things beautiful, but it was like dark, and low, and cave-like. And it was like, "How are people supposed to learn and be joyful and creative in a space like this?" To me, that was critically important, and it was very depressing for me. It's like, "I can't spend eight hours in this building [laughter]."*

Participants frequently made connections between their creativity and combinations of architectural attributes. Most shared these experiences on the walking tour when asked to identify a creativity limiting space in the building. In a room on the lower level of the building, T02 described their choice of location. They said, "*No windows, low ceiling. I mean, it's lit by fluorescent lights. To me, that's just like gives me just yucky feelings. I'd rather have sunlight… I would not want to teach down here*." During the interview when asked to describe a limiting experience, T04 described a space that was "*too small, too cavey, like you can't see outside."* They added, *"You have just a feeling of claustrophobia [laughter]. That was not fun for me or feeling creative when I would have to go and teach in that classroom."*

Finding 1b: Creativity Enabling Attributes of the Socio-Organizational Environment: Creative instructors are enabled by two aspects of the socio-organizational environment. They are inspired by a school culture that encourages social engagement, which they define as meaningful interactions with colleagues and meaningful relationships with learners. Creative instructors are also creatively enabled by a socio-organizational environment which permits a degree of control over and ownership of instructional spaces.

Social Engagement

A teaching and learning community that fosters a culture of meaningful human interactions is an important aspect of creative instruction. Creative instructors feel inspired and enabled when they have opportunities to collaborate and interact with their colleagues, and also see the creative activities of other instructors in the building. Creative instructors are also inspired and enabled by the relationships they have with their students. A social environment that cultivates a professional community and encourages individual relationships is described as a source of creative inspiration, and also teacher happiness that permeates the total classroom environment.

Meaningful Interactions with Colleagues

Creative instructors associate the social environment with their colleagues as an important aspect of creative teaching. The interview questions did not ask participants about their instructional community. However, when asked to describe creative teaching experiences, the frequency and depth of interactions with instructional colleagues emerged as important to creative instruction for all of the participants. T04 described how opportunities to have personal and professional exchanges with colleagues are an

"*important part of the whole experience*" of creative teaching. In the passage below, they shared a typical routine that they would exercise with a former co-instructor, which illustrates how interacting with colleagues serves to inspire the development of ideas and support professional growth.

> *We would sit across the desk from each other and she'd say, "Well, what [project] are you doing today?" And so, she was very much a part of the whole experience that I was having and supporting me. […] She and I would always have breakfast together. And she would tell me about her projects, and I would tell her what I'm doing, and then we had one grade level that we each taught, so we did common planning about that. I don't know. It was just a very supportive way to share our ideas and get feedback without-- I never ever said, "Well, I think you should do it this way, or you should do it that way." And she would-- when she developed a plan then I would try to sit and watch when she introduced it so that I could do it similar, if it was across a grade level, and she would do the same for me so that we could see each other's teaching styles.*

Most of the participants shared the belief that instructional colleagues play a significant role in supporting their creative process. Colleagues are an invaluable resource because they are a soundboard for ideas, provide feedback, help prepare and actualize the ideas, and provide perspective. When asked to talk more about generating creative instructionally creative ideas, T03 shared:

> *Having a teaching partner is huge. Having somebody else in the classroom to talk to, and to bounce ideas off, or to prep things, and prepare things, or think about things in different ways because I don't have to always focus on the here and now. So while he's doing something, I may think, "Oh, we could," or, "Oh, next time, we should," or, "Maybe we could have, because I can see--" I mean, when you're not the teacher, you're standing, watching, you're almost like the student and you get a different perspective on how things are going. And so, I think that that does matter, for sure, having two people, having that collaboration. […] It is very nice. And it adds to things because when you get stuck in a rut, then somebody else is pulling you out of the rut saying, "Maybe we should try this angle, or maybe we could incorporate that," or, "Hey, did we think about this project or this assignment through this lens?" So, collaboration in the team stuff is huge.*

Though in-person interactions and collaborations are important, creative instructors share that they are inspired just by seeing the creative activities of a colleague. Much of this exposure is facilitated though seeing work pinned up in the hallways, or by peering into a room when a class is in session. T02 shared how having a different schedule than her colleagues allowed for this.

> *When you walk down-- because we have different schedules. Our kids are in specialist at different times, so sometimes we'll have a little prep time, and I'll be going to the copier and I'll walk by the classroom next door and they'll be working on some creative project. I'll see something up on the screen, or the student will be up presenting a video, or I'll see something that's hanging on their walls that the kids have created and it's like, "Oh, that's so..." In a blip of time, you can get a feeling for that's something really creative and cool...*

Most of the participants shared that they are creatively enabled and inspired by the degree of professional interactions at the sample school. However, T01 described their interactions as deficient, and identified it as an aspect of the school environment that is creatively limiting. Feeling isolated from colleagues, and desiring more exposure to the ideas, activities, and feedback of colleagues, they shared, *"I think something that I find limiting here is that we don't have a lot of time to talk with other teachers about the lessons we're teaching. I don't think they're aware of lessons that I'm doing or I'm not aware of lessons they're doing, and so we don't have that exchange as much*." They used a past experience as a comparison, saying*, "In other schools I've worked in, I've found that a lot more."*

Meaningful Relationships with Learners

Creative instructors associate the social environment with their students as an important aspect of creative teaching. When asked to talk about creative inspiration and experiences, all of the participants referenced their relationships with the learners in a way that went beyond a typical student-teacher relationship.

The first interview question asked participants to describe what creative teaching means to them. Participants frequently answered this question in a way that shared how creative inspiration emerges from their relationship with the learner. T02 *shared. "I feel like so much of my creativity comes from the individual relationships and knowing your kids."* When asked to explain in more detail, they shared:

> *So, there's a lot of getting to know individual students and responding to that. Responding to their interests, their passions, their questions, their experiences, their backgrounds, all that. And including those parts of yourself in your teaching too. So, whatever you care most about, I think to develop those things and to include those things in your teaching always makes it more exciting, more authentic, and more creative.*

Some participants indicated that the separation of learner creativity and instructor creativity is difficult. During the interview, T04 remarked, *"What's interesting is we're*

talking about my creativity and part of it is student creativity and fostering that, and then part of it is my feeling that I'm being creative. So, I hope I'm not confusing the two or I mean, I think there's a lot of crossover." T03 described a similar connection between instructor and learner creativity, sharing, *"The first thing that I do is come in and try to create a climate where kids can be creative, can move, can do what they want to do, can be social and collaborative."* T02 illustrated this by describing how one of their most creative teaching ideas involved developing a kid-like academic conference that was envisioned as a generative learning experience. They perceived the idea as instructionally creative for "*bringing the kids creativity to the surface."* In talking about it, they shared that:

> *It's not so much like, "Oh. I have this grand plan and scheme and I'm going to do this really super fun thing and I'm going to make all the parts." It's more like, "What can the kids do that will be meaningful to them?" […] If you allow students to have the freedom and the independence and give them sort of that agency, they will do amazing things. It's almost like step back and be less of a teacher. I mean less of a talker, less of a like, "Let's do this thing that I thought of," and it's like, "Okay, I have this idea, but then now you make it what you want it to be and make it good."*

Creative instructors are deeply invested in connecting personally and meaningfully with their students in a way that goes beyond lessons and acquisition of knowledge. The investment is a source of professional happiness and creative inspiration. T06 shared:

> *I think of the joy and delight is in two parts. It's joy, the part of the kids getting a kick out of it. There's one part. Then the other part makes me think of self-actualization. And if you have your ideas and you get to bring them to life, and it benefits the people you want to benefit, then that's joy for me, personally, or you, a teacher, if it works.*

The relationship that creative instructors share with the learners also manifests as classroom ambiance and culture. This was particularly evident with T06. When asked about the most creatively inspiring place in the building, they identified their instructional space because:

> *[This is] where I spend a lot of time every day with the kids - my whole day. And I just love it because there's-- I think with my partner, we've worked together to make it a really welcoming environment emotionally and physically. Spiritually."*

> […] *"It has a good feeling in here. Because I think kids come in and they know they're part of a community and that their teachers love them. That's the biggest thing to me.*

Individual Control and Ownership of Space

Creative instructors value a socio-organizational environment that fosters a balance between collaborative and individual dimensions. When a school is structured around a team-teaching approach, creative teachers perceive aspects of individual control over and ownership of spaces as creatively enabling.

Spaces that allow for some degree of individual occupancy and control provide creative instructors with privacy, and a place to think and work. Most of the participants described how spaces of personal retreat are important. T02 explained illustrated how a space adjacent to their shared classroom serves this need. "*We have another room. So, this is our-- we call it the main room or the big classroom, and then the breakout room is where we have-- he has his desk in there. We have our desks in separate rooms so that we have our own separate space when we need to stop talking and get stuff done."*

Instructional spaces that lack a sufficient degree of individual control can cause disagreements in personalization. Two participants shared experiences of feeling creativity limited when spaces are shared. T02 talked through their frustration with a space in the building that they identified as creatively limiting. When asked to explain more, they said,

> *I don't know if it's partly because it doesn't feel like my space as much. It's not my classroom or my teaching partner's. It feels like a little bit like it belongs to other-- I don't know. It doesn't really because it's sort of everyone's. It's shared. It's just sort of like a place you get in and get out. […] You just kind of don't want to spend a lot of time and it doesn't feel as inspiring and creative.*

T04 also shared insight about similar limitations when visiting a space on the walking interview where they used to teach. They said, *"I feel like this a great space, but I feel it could be more conducive to creative inspiration, more inspirational."* When asked to talk more about this, they said,

> *Because other teachers used the space as well, I had to be pretty organized and keep everything kind of-- I couldn't just take over [laughter]…. So, I think that would tend to put a little bit of, I don't know, buffer on the creativity.*

When T04 shared their feelings about their past experiences in the space, they also eluded that the space still had limiting qualities about it, saying that if it was their own space, they would have to "*liven it up*." They also communicated a frustration in their current space when pointing to something in their current classroom that they had personalized. They illustrated how shared space can cause disagreement among teaching teams, saying, "*This is the arrangement that my teaching partner thinks is way too visually over stimulating."*

Finding 2: Attributes of the Environment that Relate to Creative Instruction are Interrelated. *100% of participants shared experiences that describe how several aspects of the physical and socio-organizational environment combine in ways that impact creative instruction.*

Attributes of the environment that relate to creative instruction are interrelated. The relationship between the physical and socio-organization is complex. The complexities support an instructional environment that creative instructors perceive in variable ways; some feel creatively enabled, and others limited. All participants shared experiences that illustrate the overlap of these attributes, and the impact on creative teaching.

A physical environment that provides surfaces that display thinking is connected to a social environment that encourages meaningful relationships with students, and an organizational environment that gives teachers instructional freedom to try new things. T02 illustrated this when describing a creative experience in their classroom that involved a "writing wall" for the learners to showcase their work. When asked to talk more about the writing wall, they replied,

> *So, to me, this just feels like a place to let [students] showcase things that they're doing that aren't part of any specific curriculum, I guess some of it is a little bit sort of organic and just happens. […] it was sort of like one person came in and said, "Oh, I wrote this newsletter at home for my brother, and I wanted to show you." And I was like, "Let's put that up. Other kids might be inspired by that!" And then it just sort of started to happen… It was like, "Oh, let's put that up here." […] It wasn't like a big announcement or anything, like, "This is where we're going to do this." It just sort of started to happen.*

A physical environment that provides surfaces that display thinking is connected to a social environment that encourages meaningful interactions with colleagues. Creative ideas that are displayed in hallways often result in gaining the praise of other teachers

and administrative figures, and sometimes facilitate dialogue and the exchange of instructional ideas. T01 suggested this, sharing, *"I think that when you do a lesson and you immediately put it up on your bulletin board [another] teacher will walk by and be like, "That's really cool. Tell me more about that."* T04 also suggested a strong connection and provided a more elaborate example of how displayed thinking can span a network of connections with other teachers. They referred to a project they had displayed in the school. A colleague saw the project, and then got the idea to have their students make a book. They book was then exhibited for all to see, and the cycle continued, ultimately resulting in purchased art work. The idea started with her displaying her own work, and then the idea "*just kind of took off*."

A socio-organizational environment that permits instructors a sense of control or ownership over spaces is connected to aspects that encourage meaningful interactions with colleagues, and with the organization of furnishings in the physical environment. This combination of attributes is described as a dynamic combination that was discussed in-depth by three of participants. Two of the participants described variable creative experiences. T04 related the organization of furnishings in a shared classroom to their personal and professional interactions with a former teaching partner. They described their experience as creatively inspiring. They recalled," *We would sit across the desk from each other and she'd say, 'Well, what apple[drawing] are you doing today?' And so, she was very much a part of the whole experience that I was having and supporting me."* However, T01 shared a different experience. They described how sharing spaces can cause conflicts with colleagues about the personalization of the instructional environment. They said, "*The interesting thing about team teaching is that you would have to compromise with your partner, and you both bring different styles and different approaches to how you want a physical space to be*.

T05 provided the most complex illustration of how a physical and social instructional environment are interrelated, and how the attributes combine to impact how a creative teacher works in their environment. When asked what they need to work creativity, their reply identified a multitude of dimensions. They shared,

> *I like to work with people, but I like it quiet, too. So, there are rules of working together… You can have your earbuds in if you want, or whatever, doing the work, but having wide-open spaces with not too much clutter. I've tried to get rid of my desk, but I try to hide it as much [as possible]. There's so many subparts of teaching that-- there's your content, and then under that there's reading and there's math, and then there's a social-emotional curriculum which is huge…*

> *That's why I love it. But then there's the teaching environment, and that's what it looks like, that's how you talk, that's your management. And then there's routines, like how do you structure your day. There's just so many different parts of teaching that there's never enough. You're never done learning, and you're never done getting new ideas.*

Finally, the attributes of the physical environment are interrelated. The participants rarely talked about their creativity and the physical environment in a way that concerned remote variables. Most of the time they shared experiences that were difficult to categorize among one single physical attribute. This circumstance is best represented by T04's reply when asked to describe their creative inspirations in a space during the walking interview. They said, "*I can't just take any one thing out of this room and say it's the thing. It's the whole environment.*"

Finding 3: The Organizational Environment is Dominant and Negotiates Instructionally Creative Behavior. *100% of participants shared experiences that describe how instructionally creative behavior is negotiated by the organizational environment. An organization environment that cultivates a cultural ethos of instructional autonomy and professional trust enables creative instruction. The organizational environment determines the degree of interaction that a creative instructor has with the physical and social environment.*

The first interview question asked participants to share what creative teaching means to them. The answers provided a broad range of perceptions related to organizational dimensions of the environment. T01 described creative instruction it as having the "*freedom and the flexibility to make independent decisions about how you want to present content to students and maybe even decide what the content is."* And, T02 defined it as having individual agency to bring *"your own sort of outlook, your own perspective, your own ideas."* When asked to talk more about it, they shared:

> *You're not tied to, "Oh I need to do it this way. I need to follow the way we've always done it, or the way this packaged curriculum says we should do it." So, kind of bringing your own just flexibility and spontaneity to every lesson. And just I think recognizing the individuality of not only yourself as a teacher, as a creative person, but also the kids*.

An environment that cultivates a cultural ethos of instructional autonomy and professional trust enables creative instruction. All participants described the sample

school as an organizational environment that is characterized by these important attributes. For this reason, T03 had a difficult time identifying how they felt creatively limited by their environment because it supports such a high degree of autonomy and trust. T02 described the teachers' creativity, passions and interests as a "*hallmark*" of the school curriculum that emerges as creative ways into the classroom. They said, "*to some it might look like wasted time, but it's not... we recognize the value of that.*" T05 shared, *"We're the kind of teachers that want to go to workshops instead of like "Oh, I can't do that because I'd have to pay my own money," or, "My principal doesn't really encourage that". So that breeds a culture."* Other participants who defined their organizational environment as a supportive culture said:

> *We have a framework of standards, but how we teach, and what we teach, and resources we use are really up to us. We each can decide what we want to do. And it's great, but it can present some challenges too when you're trying to be a team and you're trying to be a cohesive school. But in terms of creativity, I think this place, we can do whatever we want, and we have resources when we need them. I don't know that I've ever asked for something and haven't been given it.* (T03)

> *So that's just so nurtured and supported by the school. The freedom and the independence that is allowed between-- from room to room, it's just very apparent, and you can see it on the walls, and you can see it when you walk by a class and you're like, "What are they doing? Oh, it's so cool what they're doing in there [laughter]," and you're kind of like, "I want to try that, too." But there's so much creativity going on…* (T02)

Creative instructors relate supervising figures as an integral aspect of an organizational environment that supports creative instruction. T05 described how they felt creatively enabled just days before because the principal had walked in and inquired about a project they were working on, and remarked, *"Tell me more about these. These are really cool!"* Others also shared feeling creatively enabled by the administration. T04 said, "*The fact that I've been allowed to develop my program and arrange my room in a way that feels good for the way I teach is huge!"* T05 based their experience on a thirty-year tenure with the school. They commented, "*I love it more every year simply because the administration is getting to a point where you can be autonomous and do creative things and be supported with it."* T02 shared how their creativity is supported by the principal and *"overall school and administration, that feels like it's a value that teachers do continue to learn and be creative individuals."*

In contrast to above, most of the participants had experienced teaching in other environments prior to teaching at the sample school. The past experiences provided rich stories that illustrate how an organizational environment that lacks an autonomous and trusting ethos can impact instructional creativity in a negative way. T01 described feeling limited when a former school required them to teach specific content in a specific way. It felt “very limited” because they did not perceive the prescribed content and delivery as effective or creative.

Prescribed and scheduled delivery of content and curriculum is a major barrier to creative instruction. When T02 was asked to talk about what creative teaching means to them, they provided a rich illustration. They described an experience at a former school where physical resources were available to support instructionally creative ideas, yet they rarely manifested because of the organizational environment. They shared,

> *At my last school it was starting to feel very-- like the teaching felt less and less creative and less and less about teachers' own sort of personal interests and abilities and artistry, and more about really truly becoming more prescribed in terms of every teacher, almost to the point of being scripted. Every teacher teaching the same lessons the same way on the same day so that there was-- not conformity, but the goal, the good-intended, well-intended goal, was that no matter what building you were in as a student in that district, you would have the same experience and the same opportunity. So, it was about equity. I mean, that was the goal of it. But as a teacher in your classroom, it was feeling very controlled by administration. Almost like you were being watched a little bit, and if you weren't doing it the way it was prescribed and if you didn't have-- if you couldn't show or prove that what you were doing at the moment if anyone walked in your room-- if the kids couldn't or you couldn't point to the standard on the wall why you were doing what you were doing, you shouldn't be doing it and you were kind of busted and in trouble… So, you almost felt like you had to sneak like, "Let's make a snowman, or something like--" That would be like we-- well what if the principal walked in? Even doing something that was within the curriculum, but you were trying to sort of do it in a more fun way, or a more child-centered, more engaging, what you felt as your own feelings about the way the material's being presented. If you're trying to add something that made it more engaging really, sometimes it's like, well is this time well spent? You're cutting these things out that can be fun and engaging like some of the actual hands-on things that make a day-- that breaks up the day of just like the super intense academic study… And so, it was feeling really like things that you had maybe wanted to put into your own teaching curriculum we're being-- you're being told not to do that anymore and to really try to do things the way we were all-- and so the individual creativity was being squelched. And that felt like a district movement and there was a lot of unhappy teachers at my building... and so, it was a lot of pressure on the principal and then that kind of fell down onto the teachers too. Following script and a protocol with no input of my own into how that content is delivered felt really constrictive.*

When T02 was later asked to share a creatively limiting experience. They briefly referenced the experience illustrated above. But, instead of re-describing that experience, they chose to shift the conversation to illustrate how their current school creatively enables them. They shared,

> *I've experienced really, really vastly different kinds of teaching environments. And it can totally dictate how much creativity is allowed, is promoted, is supported. I mean, coming here, I'm glad that I had experience in other buildings because I think I will always appreciate deeply-- I just am so grateful. Every single day, I'm pinching myself still that there is a school like this, and hopefully others like it, that allow teachers to present things in their own way, following their own passions, but also promotes the continued learning of whatever we're interested in*.

Finally, the organization environment negotiates how creative instructors interact with the physical environment. Participants described experiences of feeling creatively limited by their organizational environment despite the creatively enabling aspects of the physical environment. The following passages demonstrate that the physical environment matters less to creative instructors than the freedom of agency.

> *When discussing the attributes of the space that one participant identified as creativity limiting for the lack of natural light, square footage, and overall ambiance, they said that if it were their space, they "would make the best of it… I would make the best of the situation.* (T06)

> *If it was dark, and dreary, and smelly, and moldy, I think that would be hard, but I could do it. I think it would be different, but I could still be okay as long as I could do what I do with kids. If that's all there was, I think we could do it.* (T03)

When the physical environment lacks creatively enabling qualities, but the organizational environment supports autonomy and trust, creative instructors thrive anyway. T03 described a creatively enabling environment as "*a people environment more than a space. I could do what I do and be what I am anywhere. It's just a matter of if people are with me or against me… I don't think it's a place. It's about the people in the place."* T02 also illustrated this when they said:

> *I do feel like as a teacher, I've done this, and I know lots of teachers have done it, despite the space. Yes, there's the ideal. There's the inspiring, and the beautiful. But we will do it, despite that. I mean, because I think people who go into teaching, for the most part, are creative people. I mean… but that people want to*

> *do what they can with the space that they're given. And sometimes you're given a really crappy space. Or a really uninspiring, ugly, too small, dingy space. But you're still going to try to rise above that. And so, I think that the environment and the space contribute a lot to creativity and learning. But I also think that people will do great things regardless of the space because it's their calling or feels like why they're in it.*

Summary of Findings

The goal of this dissertation is to know what aspects of the environment relate to instructional creativity. The knowledge that emerged from interviewing creative instructors about the instructional environment resulted in three major findings.

1. Attributes of the environment enable creative instruction and include aspects of both the physical and socio-organizational environment.
2. Attributes of the environment that relate to creative instruction are interrelated.
3. The organizational environment is dominant and negotiates instructionally creative behavior.

The findings are discussed in Chapter 5.

Chapter V: Discussion

Summary of the Research Study

Creativity is an exciting area of research in education because it is increasingly understood to benefit learners. Creative teaching is effective teaching that enhances learning (Sawyer, 2011; Reilly et al., 2011; Rinkevich, 2011) and promotes creativity among learners (Nickerson, 2010; Horng et al., 2005). Understanding the effect of context on teachers is essential. However, research of related literature shows that knowledge about creative instructors is severely lacking.

The goal of this research was to gain understanding about creative instruction and the environment. This dissertation asks: What aspects of the environment relate to instructional creativity? This study approached answering this question in three ways. First, by analyzing related literature. Second, by conducting an investigation that defines the key attributes of the environment. And third, by conducting an investigation that delineates the role of those attributes in mediating instructional creativity.

The literature review was structured around the constructs of the Four-P Model of Creativity (Rhodes, 1987). The model was selected as an organizational strategy because the model is widely used to understand creativity in non-educational work environments where creative performance and outcomes are desired. Rhode's model defines four creative dimensions known as the Four-Ps: person, process, product, and press (environment, place). This study used the Four-Ps to systematically review related literature, and as a method to reveal and confirm the gaps in knowledge. The review supported that attributes and role of the environment to creative instruction are not well understood or defined.

The results of the systematic review were compiled as a Four-P conceptual framework of instructional creativity, based on the existing knowledge (Figure 2.7). Using related literature from non-educational domains, the framework was modified to develop the Proposed Environment Model of Creative Instruction (Figure 2.10).

The systematic review and resulting conceptual framework guided a mixed-method research design for discovery that makes creative teachers the unit of study. Participants were selected from a private school in the Midwest that is rumored to have several creative teachers. the Abbreviated Torrance Test for Adults (ATTA) was used to determine their Creative Index or CI (Goff, 2002). The participants with a "high" or "substantial" creative index were invited to interview.

Two semi-structured, responsive interviewing techniques were implemented to learn about creative teaching experiences. Participants were first interviewed in their teaching space, followed immediately by a participant-led, walking interview through the building. The walking interview was designed to integrate the environment as a creativity-probe. Descriptive data was interpreted, coded and analyzed to identify aspects of the environment that they perceive as important to creative instruction.

Chapter 4 presented the knowledge that emerged the insight of creative teachers who shared personal experiences of feeling creatively enabled or limited. Three major findings emerged and are discussed in the following sections.

1. Attributes of the environment enable creative instruction and include aspects of both the physical and socio-organizational environment.
2. Attributes of the environment that relate to creative instruction are interrelated.
3. The organizational environment is dominant and negotiates instructionally creative behavior.

Interpretation of the Findings

The participants of this study shared experiences that define important aspects of the environment to creative instruction. The results suggest that the environment is categorized as both physical or socio-organizational, and that each category is defined by specific components and attributes. The emergent categories and attributes are organized in Table 5.1.

PRESS	ENABLING OR INSPIRING ATTRIBUTES
PHYSICAL	**Furniture + Interior Finishes** - Support to Personalize - Support to Organize - Support to Reconfigure - Support to Display Thinking **Building Architecture** - Proportions of Space - Connection to Nature
SOCIO-ORGANIZATIONAL	**Social Aspects** - Interactions with Colleagues - Relationships with Learners **Control of Ownership of Space**

Table 5.1 Perceived Attributes of the Environment that Relate to Creative Instruction

The degree of agreement among the participants about the impact of the physical environment on creative instruction was consistent. All of the participants identified how furnishings and interior finishes and building architecture are creatively enabling or inspiring. When discussing the specific attributes, the response rate was 83% of higher. This suggests that the physical environment is essential to creative praxis. The category that had the fewest unified responses was architectural. Half of the participants identified connections to nature as significant to their creativity, but they referenced it in varying ways. However, the participants who identified views, daylight, and access to outdoors as creatively inspiring offered rich descriptions.

The degree of agreement about the creatively enabling and inspiring aspects of the socio-organization environment was also encouraging. All participants shared how their creative experiences are entangled by interactions and relationships with the people around them. Social interactions were sometimes shared as a challenge (discussed in more detail below later in this chapter). However, interactions with the people the teaching and learning community emerged as an extremely salient and positive aspect to instructional creativity.

Several conclusions about creative instruction and the environment were reached as a result of this dissertation. Some of the conclusions were not surprising, and other provide unique knowledge about the environment and instructional creativity. The findings that emerged in Chapter 4 are discussed in the following sections in support of the following conclusions:

1. Schools are workplaces that can be defined by attributes that affect creative instruction
2. Creative instruction is an environment-dependent system
3. The environment has an important relationship with creative instruction
4. A creative learning environment partially enables creative instruction

Conclusions

Schools are Workplaces that can be Defined by Attributes that Affect Creative Instruction

Chapter 2 presented literature that relates to creative instruction and the environment. The review was organized using Rhodes Four-P Model of Creativity (1987) which defines creativity by person, process, product, and press. The model was used as an organizational strategy to organize the related literature. This study was primarily concerned with knowing how a “person” of a creative system (one with a high creative ability) perceives “press“ as important to an instructionally creative “process” and

"product." *Press* is the environment or the contexts surrounding a "creative act." (Hasirci & Demirkan, 2007). We know that the physical, social, and organizational press relates to creativity across domains, and is important to creative product in organizations (Amabile, 1983, 1996a; Csikszentmihalyi, 1996; Amabile et al., 1996; Sternberg & Lubart, 1996; Puccio et al., 2000; Phelan, 2001; McCoy, 2005; Sawyer, 2006, 2011; Vischer, 2007; Dul & Ceylan, 2006; Dul, 2009; Dul, Ceylan & Jaspers, 2011; de Korte et al., 2011; Dul & Ceylan 2011; Martens, 2011; Williams, 2013; Kafashpour & Gharibpour, 2016).

Much of our understanding about "press" has emerged from workplace creativity research. One might assume that teachers have been included among such studies. However, research concerning workplace creativity has not included teaching as a creative profession. It has been overlooked.

The participants of this study are creative. What they shared in the interviews are descriptive accounts of how the environment matters to doing their job in a creative way. The comparisons of the findings in Chapter 4 to existing literature about workplace creativity illuminates new trajectories to understand a topic that is grossly lacking scholarship.

There are distinct parallels between the attributes of the environment that emerged from this study and those that have emerged from research concerning creativity in the workplace. The parallels are rousing because they offer explanations that related research in education does not, and because is suggests that the teachers deserve to be acknowledged as "knowledge workers." Knowledge workers are a "creative class" of professionals (Florida, 2005). They create and distribute knowledge and generate original ideas that are useful to their respective industries.

If teachers are knowledge workers, then the findings of this study do not seem all that surprising. Dul & Ceylan (2011) found that the physical and socio-organization environment plays an integral role in the creative work process for "knowledge workers. In fact, several studies suggest how the environment creativity enables and inspires knowledge workers.

McCoy & Evans (2002) found that spatial elements (i.e. shapes, light, size) enhance the "creative potential" of a workplace space (p. 418) and can predict creative performance. The attributes they concluded as creatively enabling include visual details, views to nature, and social interactions. Kristensen (2004) found that that work environments support a creative process when the furnishings are not fixed, when large

surfaces like worktables are provided, when the space supports clustering and collaborating, and has an overall sense of adaptability. McCoy (2005) revealed that distinct attributes of the physical environment are connected to the creative performance of teams in the workplace. The proximity to resources, space planning and layout, circulation patterns, surfaces that allow for personal customization and displayed thinking, sizeable work areas, adaptability of space, visual access to others, and the opportunity to work in multiple areas. Dul & Ceylan (2011) compiled a list of physical and socio-organizational elements of the work environment that are "possibly" related to the workplace creativity. Their list includes teamwork, autonomy, furniture, privacy, views to nature, and daylight. Marten's (2011) investigation of the physical workplace and creativity summarized that open and ample space, featuring visual work, and interactions with people are among important attributes of a creative workplace culture.

The evidence that has emerged from workplace research overlaps with the findings of this study. The findings of this study support that creative instructors are enabled and inspired by their environment in the same way other creative professionals are. Creative instructors are arguably knowledge workers who have a unique type of work that is important to the distribution of knowledge. Schools *are* workplaces that can be defined by attributes that affect creative instruction.

Creative Instruction is an Environment-Dependent System

The findings suggest that instructional creativity is as a complex, interactive system that is driven by the environment. The interviews reveled that creative instructors perceive that specific attributes of the physical and socio-organizational environment are creatively enabling (Table 5.1). Creative instructors also perceive the attributes in Table 5.1 as interrelated. The previous section asserted that schools are workplaces. The idea that attributes of the environment are interrelated to support instructional creativity is supported by related literature on many accounts.

One of the exercises of analyzing the findings was to return to the descriptive data and review the perceived relationships between the "parts." The relationships were recorded using NVIVO software. The result was a graphic visualization that indicates those connections.

Figure 5.1 Interrelated Attributes of the Environment that Relate to Creative Instruction

Figure 5.1 illustrates what the creative instructors perceive as interrelated attributes that enable or inspire their creativity. When the participants shared the importance of one attribute they offered information about how that attribute related to another. In the process of generating the graphic, some relationships were determined by omission. For example, if a participant talked about feeling creatively limited because they couldn't do what they wanted in a space because it "it's not mine," that indicated that the control and ownership of space and personalization are connected. In some instances, participants captured all of the attributes in sharing a single creative experience. This supported that the relationships were interpreted as extremely complex.

Figure 5.1 also illustrates how frequently attributes are connected to another. Creative instructors perceive that an environment that supports for personalization and displayed thinking are the most interrelated attributes that enable and inspire their creativity. Another aspect illustrated in Figure 5.1 is how the socio-organizational attributes connect to the physical attributes. The most common physical connection to the socio-organizational environment was support to personalize. The least interrelated of all the attributes was having control and ownership of space, followed up by connections to nature.

There is evidence that suggests that new facilities can augmented perceptions about the environment and creativity (Engelen et al., 2016). Ford (2016) suggests that the built environment can sway instructors can sway instructors to teach at particular schools. White & Lorenzi (2016) suggest that "physical space is a contributory element to the generation of an environment which fosters creativity." However, the "physical environment is not in itself sufficient" because the social-emotional and critical dimensions are equally important (p. 786). Finding three of this study agrees with White & Lorenzi; creative instruction relates to much more than bricks and mortar.

The participants of this study agree that their school creatively enables and inspires them. The experiences they shared helped define what enables and inspires them. However, the interview questions were not only concerned with enabling and inspiring creativity. They also asked participants to share experiences of feeling creativity limited. Most of the anecdotes about feeling limited described experiences from prior teaching environments. Those stories provided most of the descriptive data about how the environment can be creatively limiting.

Differences between the physical and socio-organizational environment emerged in this study. And, the experiences they shared suggest that the organizational environment plays a unique role in instructional creativity. As an intervening variable, it mediates creative actions and behavior.

Figure 5.1 illustrates that the attributes that enable and inspire instructional creativity are interrelated and suggest that the system is complex. However, finding three of this study suggests that the front-load of this system is actually *simple.* The Environment Model of Creative Instruction (Figure 5.2) suggests that creative instruction is environment-dependent.

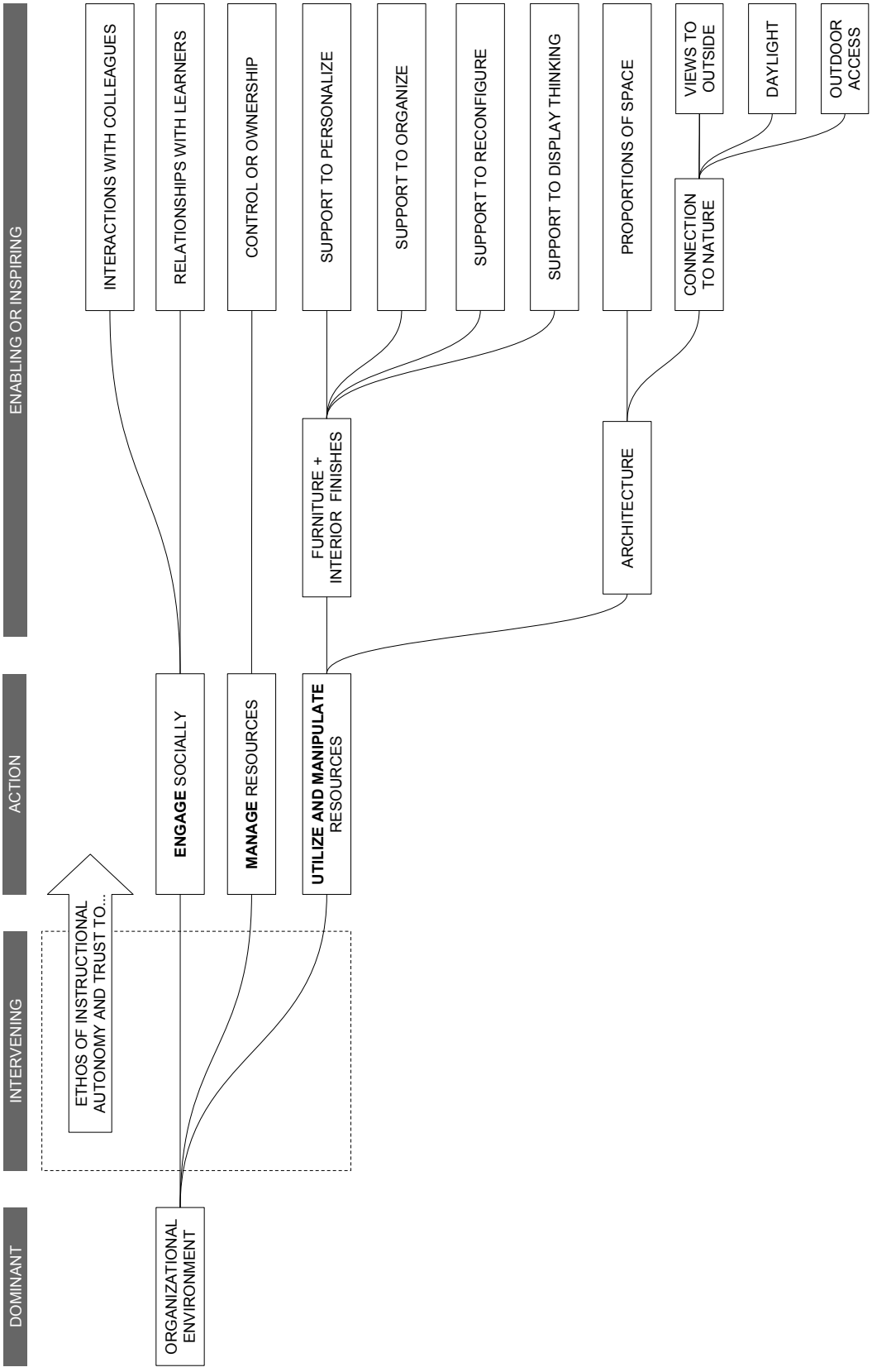
The Environment Model was developed by combining and interpreting he findings of this study. Figure 2.10 from Chapter 2 was referenced as a precedent model that emerged by analyzing the literature. Figure 5.1 is based on the Four-Ps of creativity (Rhodes, 1987): creative person, process, product and press. The "person" is the creative instructor. The "press" is the environment, and the "process" and "product" are the inspired and expressed actions of the creative instructor. Figure 2.10 and 5.2 have exciting similarities that suggest that the insight gained through this study aligns well with the related literature. Both model position the environment as an intervening variable.

The Environment Model proposes that creative instructors perceive the organizational environment as an intervening variable that mediates their creativity. To clarify, the system can be construed as "simple" because it is controlled by the organizational environment – a creative gatekeeper.

Creative instruction is improvisational and unscripted (Sawyer, 2004, 2010). The idea of instruction as organic and dynamic suggests potential conflicts with the Environment Model. A creative instructor may perceive creative affordances (Glăveanu, 2012) of their physical environment, and they may want to act (and in some cases, spontaneously). Do they?

This research suggests the organizational environment (i.e. administration) controls what creative instructors *do* with perceived creative affordances. The participants described how an inspiring instructional environment is influenced by a "culture" or ethos of instructional autonomy and trust. A supportive ethos permits a creative teacher to engage socially, manage resources, and to utilize and manipulate resources. When creative instructors are trusted and have autonomy to deliver content in the way they feel is effective, they are creatively enabled and inspired by their environment.

Figure 5.2 Environment Model of Creative Instruction



The passages in Chapter 4 described instances of feeling supported by their administration and making "crappy" spaces work. And they described instances of being inspired by the physical environment (i.e. to go outside, build a snowman, do something differently), but did nothing out of fear of being reprimanded. Some participants described experiences of sneaking or breaking the rules because the creative limitations were so "depressing" and they were compelled to act. But, in most cases the stories described how organizational forces bullied them into taking no creative action.

The idea that the socio-organization environment can "block" creativity is not all that unique. Evidence from workplace creativity research supports that physical creative affordances are "secondary" to the organizational environment. Dul, Ceylan & Jaspar (2011) determined that knowledge workers associate the socio-organizational environment of the workplace as more important. While the physical environment somewhat matters to those with a high creative ability, they determined that the impact is small. However, they found that the non-physical environment has a mediating impact on creative employees. Dul (2009, p. 19-20) writes,

> *Creative workers that are placed in traditional productivity driven work environments may not show the desired creative behavior. Organizational work environments that are designed for productivity, having formal management structures, time constraints, strict regulations, daily similar tasks, etc., may even obstruct or inhibit worker creativity.*

As suggested by Dul, creative employees do not respond creatively to an environment that prescribes controls. The findings of this study suggest that creative instructors experience the same pressures.

Perceived Attributes of the Environment that Matter to Creative Instruction

Generally, the breath of attributes of the environment that matter to creative instruction are *not* all that surprising. The protocols asked participants questions while interviewing in their classrooms, and then asked them to identify places in the building where they experienced feeling creatively limited or inspired. The concept of "space" is multidimensional. It "lends itself to be read not only in physical but also in metaphorical terms. It encompasses physical architecture/surroundings, climate, atmosphere, attitudes, relations and experiences." (White & Lorenzi, 2016, p. 773).

Personalizing and modifying, organizing, reconfiguring, and displaying emerged as distinct activities that creative teachers perceive to enable creative instruction. This was not a surprising outcome of this study. Martin (2002) suggests that manipulating the

environment is an activity that teachers typically do to “create conditions” that are “salient to the pupil.” (p. 140). Altering the “nature of space” is described by Jeffrey (2006) as an instructionally creative use of space. They suggest that altering a “normal” teaching environment is how teachers facilitate learner creativity. Ford (2016) states that when the environment is flexible. teachers are “empowered” to engage more instructional techniques (p. 26). These precedent studies are not about creative instructors. However, the findings of this study suggest that manipulating the environment might not be unique to instructors that are measurably creative. Rather, it might be something that teachers just do!

Some evidence in the literature works against this idea. The Theory of Creative Affordances (Glăveanu, 2012) suggests that we cannot simply assume that all teachers see the possibilities for creative instruction in the physical environment. The Theory is based on the idea that the environment is not simply a stimulus that causes behavior. Creative, behavioral outcomes are at the whim of the *person perceiving the possibilities* of the environment. Creative behavior is realized when a person as able to engage with seeing beyond what *should* be, *would* be, and *could* be done. A person who can see beyond these constructs realize there are un-invented, un-perceived, and un-exploited possibilities. And, there is some evidence to support this. Martin (2002) suggests that teachers can be “trained to perceive the environment” to overcome their lack of awareness about its possibilities (p. 140). However, training probably has limitations. For instance, Cheung (2012) discovered that feelings and beliefs about instructional creativity are not necessarily a predictor of creative praxis; often important attributes of creative instruction that are expressed as important are not observably utilized in practice. This begs to ask if the participants of this study would have exhibited something different because their creative ability is verified as “high” or “substantial.”

This study offers insight about the role of furnishings to creative activities and inspiration. Creative instructors described in detail how furnishings that can be reconfigured, moved easily, or provide a sense of flexibility feel creatively enabling. The perceived support that flexible features provide to creative instructors is not surprising. Martins (2002) found that flexibility and mobility factors define the no-fixed or “soft architecture” of a place and allow “designability” of an instructional environment (p. 143). They found a relationship of the sense of control to these factors.

The role of interior finishes is surprising because it is not represented in the related literature. The ability to display the thinking emerged as a very important theme

to creative instruction. The participants provided several examples in which advertising their ideas and the student ideas in plain sight supported very creative experiences. What's more, the exposure was connected to meaningful interactions with colleagues and relationships with the learners. In most cases, the attributes that support this activity of "display" were identified, but not talked about in a material or tectonic sense. These attributes were represented more by omission. On the walking tour, participants described surfaces that allowed for frequent manipulation and display because the surfaces afforded adhering, hanging, taping, tacking, etc. As an extreme example of this, one participant even identified a creative moment where they allowed a visiting profession to paint directly on their classroom wall.

Some precedent studies from non-educational sources suggest that displayed thinking is important to the creative process. Kristensen (2004) suggests that adaptable surfaces to features the artifacts of creative production have a positive impact on the creative process. Martens (2011) found that tangible attributes play a key role in supporting a work climate that encourages creative thinking. Kafashpour & Gharibpour (2016) found that work surfaces have a strong impact on organizational creativity. They relate the amount of surface to the creative productivity of the employees and suggest that the materiality of such surfaces should be selected carefully when conceptualizing a workplace. Our limited understanding about the concept of displayed thinking to instructional creative certainly yields opportunities for continued research.

The architectural design of school buildings is quite different today than 30 years ago. The sample school is an old, traditionally designed building that has been modified only slightly over the years to meet the needs of the community. It does not fit the description of a "21st Century School" (Lembo, Mecella & Vacca, 2013). However, the changes that have emerged alongside shifts in school architecture are companion to shifts in curriculum and teaching techniques. More attention today is given to the benefits of hands-on, project-based instruction, and larger, open spaces (Ford, 2016) are believed to support this non-traditional approach. While several school buildings lack this quality, it is a widely embraced pedagogy and highly desired by most instructional communities. This study suggests that when the instructional space is large with high ceilings and natural light, creative instructors are creatively enabled and inspired to manipulate the environment. However, the related literature suggests that *all* teachers desire it. Thus, it can be assumed that this attribute is not exclusively important to creative instructors. However, this study found that creative instructors relate building

proportions to architectural features that connect them to the natural world outside. This is not represented in the related literature and may provide some insight specific to creative instruction.

Connections outside the building and connections to nature are also supported in precedent studies about the learner, and in ample research about creativity across domains. Thus, this was not surprising that creative instructors also valued these attributes. Plambech & Van Den Bosch (2015) suggest that nature is a sensory dimension of the environment which can "evoke" creativity among creative professionals (i.e. designers, actors, artists, musicians). They found that nature makes people "curious and want to explore," and is a "great source of inspiration." (p. 260). Their findings present strong evidence that natural elements facilitate a creative process, namely the preparation and incubation stages as defined by Wallas (1976). Kafashpour & Gharibpour (2016) also found strong evidence that natural elements have a strong impact on organizational creativity. Big window views, views of greenery, and spaces with natural light can "improve the creativity in organizations." (p. 111). Natural elements are represented as important to creativity in related literature. Thus, the associations that the participants of this study made between their creativity and natural elements were not unexpected.

The importance of meaningful relationships between creative instructors and learners is not surprising. Lilly & Bramwell-Rejskind (2003) suggested the connection as an integral aspect of fostering a "dynamic process of creative teaching." (p. 18). That process engages instructional reflection and self-awareness that leads to improving professional activity. In this study, T03 described how important relationships with students define creative instruction. When asked what creative teaching means to them, they said,

> *I feel like it's all a part of that creativity comes from inside, and the only way that you can bring that out of kids is to get to know them-- I've never really thought about exactly why I do or what I do. It just feels like a human thing almost.*

Creative teachers indicated that they were enabled by having a space they have ownership of and can control. It was somewhat surprising because Plambech & Van Den Bosch (2015) found that aspects of a work environment that provide an individual a sense of refuge do not necessarily stimulate creativity. In research focused on teaching this is less of a surprising result. Jeffrey (2006) suggests that teaching innovations result

when they are “owned” by the teacher… that the “teacher has a certain autonomy and control for the process.” (p. 3). They emphasize “relevance, control, and innovation” as creative teaching contexts. The contexts that they refer to in their article are less like the ones about control and ownership that emerged in this study. But the concepts are of relevance and suggest an important connection. Creative instructors feel enabled by having control and ownership of the activities and environment associated with their professional practice.

A Creative Learning Environment Partially Enables Creative Instruction

Much of the literature that is related to this dissertation concerns learner creativity because we lack studies purely dedicated to the creative *instructional* environment. Studies about the learner contextualize our knowledge-based about the creative landscape of schools. The findings of this study compared to the related literature in interesting ways. The comparisons suggest that the aspects of creative learning environments are partially enabling to creative instructors. Comparisons with the findings of the following studies support this conclusion.

White & Lorenzi (2016) developed a model of creative space for educational environments. While their study aimed to include all stakeholders, its findings are mostly concerned with the learning environment. Their model characterizes a creative educational space by physical and social dimensions and suggests that the dimensions overlap via shared attributes. The interrelated attributes are defined as open, light, dynamic, stimulating, unexpected, and cozy, and are both tangible and metaphoric. The participants of this dissertation identified attributes that are somewhat similar to White & Lorenzi’s findings. Open, light, dynamic, stimulating can each be applied to understand aspects that the participants identified: architectural elements, physical aspects permitting the manipulation of space and decor, social interactions, and the “absence of restrictions” (p. 786).

Andiliou & Murphy (2010) had similar conclusions to White & Lorenzi about the characteristics of a creative learning environment that resemble the findings of this study. Their literature review suggested that a creative classroom environment will ensure and “open, flexible, unconventional, and student-centered environment that promotes the development of personality characteristics, thinking styles, knowledge, and skills needed for creative thinking.” (p. 211).

Pearlman (2010) summarized the trends emerging in design to meet 21st century skills. Pearlman used exemplary building designs to summarize the key physical

attributes that are leading the design of tomorrow's innovative schools. They include attributes that engage creativity, critical thinking, communication, and problem solving. The findings of this study suggest differences between the needs of creative instructors and those intended to support 21st Centrury learning. The only commonalities that emerged between these findings and Pearlman's were flexibly furnishings that can move easily, and an environment that supports a collaborative ethos. The differences provide more evidence that teachers and students have different needs to creatively thrive in an educational setting. The differences also suggest that there is a hierarchy of attributes that support creative instructors.

Organization was one notable attribute of the environment that emerged as having unique meaning to creative instruction. Creative instructors value organization. The first finding of this study suggests that organization includes things as much as it does space. The participants shared experiences that suggested they are also space designers, intent on designing an environment that is *discoverable*. Discoverability is a key principle of interaction design, using across all design disciplines. Don Norman (2013) suggests that discoverability is a quality that makes design understandable, to the degree that people can interact with it as intended, and with little to no external direction. The participants of this study talked about how they did just that. They used words like "fluid" and "efficient" to describe the environments that enabled them, and each of them had crafted the aspects of those environments on their own. Several also talked about how they had developed their instructional environment to be immediately legible and inviting for students, and to intentionally engage them.

This was an exciting outcome of this study because precedent studies related to the learning environment do not offer insight about organization by way to promote discoverability. Studies may be lacking because learners are not typically in control of those aspects of a classroom. For whatever reason, the lack in research represents an area of study that can be expanded to further our understanding about the environment and creative instruction.

There are sources from workplace creativity research that provide insight about the role of organization to a creative workplace. Sailer (2011) suggests that organization and layout play an important role in organizational creativity. They found that spatial configurations have an effect on creativity and is one factor that can be used to "judge the potential of a building." (p. 15). Though this idea is generally embrace in creativity research it has been "studied very recently, and by few scholars only." (p. 7).

To conclude, this study found evidence that creative learning environments partially enable creative instruction, mainly related to aspects that support organization. This dissertation ascertains schools as workplaces and teachers as creative professionals. More investigations are needed to know how creative learning and teaching environments overlap and differ.

Limitations of the Study

When a researcher is assigned the role of interpreting information, and allowed the freedom to construct meaning from it, there are always inherent limitations. This study attempted to properly acknowledge the assumptions and bridle the biases of the researcher throughout the process of this dissertation. These efforts extended to crafting interview protocols, conducting the interviews, analyzing and interpreting the data, and in reporting on the findings. These precautions are an effort to diffuse questions of legitimacy. Knowledge based on personal and professional experiences related to the content of this study were utilized throughout by the researcher. These experiences were utilized to develop unique ways to approach the research question, to search for and review relate literature, and to develop a research design that answers the research question. These efforts included consideration for devising representative participant groups that share a degree of teaching commonality, and the thoughtful selection of a sample school appropriate to the of interest to this study.

The most obvious weaknesses of this study stems from the limited number of participants and from a single sample school. Three of the nine participants were used to develop a parent study to pilot the methodology and interview protocols. With a broader selection of participants, additional elements such as a variability of demographics (i.e. age, gender, experience, teaching specialties) could be of importance. Time was also a factor because instructors are extremely busy professional. This put constraints on the length of the interviews, and the number of questions that could be asked during each. Limited time also contributed to difficulties in implementing additional approaches to triangulate the data, such as issuing surveys, conducting expansive photographic tours, interviewing participants in groups, and conducting observatory and ethnographic studies.

The assessments of participant creativity were also a possible limitation of this study. The ATTA (Goff, 2002) was used to measure the creative ability of participants. The ATTA is a reliable means of assessment of creative ability (Auzmendi et al., 1996). However, the instrument requires the researcher to score each participant subjectively.

That said, variability is expected any time that tasks are performed manually by a human being. A reliable alternative to the test that was used in this research design is the parent test; the Torrance Test of Creative Thinking (Torrance, 1988).

Finally, this research concerned human subjects. Though the findings of the study produced valuable information about the environment and creative instruction, there is a "general difficulty of investigating "living organisms," where intervening variables cannot be controlled. (Sailer, 2011p. 15).

While there are limitations of this study, the research design is valid because it is appropriate; the study resulted in findings that answer the research question. The research design is arguably reliable because it proved that it can be replicated; the findings from the pilot study were agreeable. The research design resulted in knowledge that is somewhat generalizable; it is supported by the rigor of sample selection, documentation, multi-phased and systematic analysis of data, and the inclusion of relevant theoretical context.

Recommendations for Future Research

This study discovered salient attributes of the environment that matter to creative instructors. Often, the attributes that matter were not surprising when comparing the findings to related literature about creative learning environments. However, when comparing the findings to literature about creativity in the workplace, the knowledge was remarkably parallel.

This study concluded that schools are workplaces that can be defined by attribute that affect creative instruction. The attributes that matter are both physical and socio-organizational in nature. The information about the physical environment can be used by design researchers to further our understanding about effective interior design, building architecture, and facility planning. This study suggests that educational facilities include a planning and programming component that acknowledges schools as workplaces where creative instruction can be optimized. Future studies are needed that compare the environmental contexts that enable learner creativity and instructor creativity.

Organization emerged as an unusual aspect of creative instruction. The notion that creative instructors are skilled interaction designers who strive for discoverability of their instructional environment is exciting and unique among related literature. It suggests that instructional spaces should be designed *by* the creative professionals who inhabit them. In the least, there should be a limit to how extensively they are designed

and prepared *for* the teacher. This is an area of study that can be further researched to explore the relationships between creative instructors and the principals of interaction design.

The Environment Model of Creative Instruction should be explored in more educational environments to include varying school designs, new and old construction, and teaching styles. This study focused on an older building to avoid the nostalgias of new facilities. The "look" and "feel" of school architecture has shifted in lieu of 21st Century Learning. What might measurably creative instructors tell us about those environments? Do attributes that relate to creativity cross pollinate the same in different educational environments? And, is the organizational environment a creative gatekeeper in a shiny new school?

This is the only known study that has use a valid measurement of creativity to explore the relationship of the environment to creative instruction. This is a rich area of research that should be continued. Future studies should also aim to understand how creative ability plays into this research. Creative ability is a flexible skill that can be improved with practice. It would be fascinating to learn how the environment is perceived to enable or limit creative actions when creative ability is fostered in all teachers. Does the Environment Model of Creative Instruction differ between a creative population and a normative one?

Ford (2016) suggests that more research is needed to know what will support 21st century *teaching*. Educational facilities are expensive to design and construct, and the evidence that the new form of schools is having on desired pedagogies is not certain. This study provides evidence that schools that support creative instruction go far beyond bricks and mortar, and that the creative impact of the environment exceeds far beyond designed, architectural aspects. Thus, this dissertation presents a valuable contribution for "stakeholders and decisions makers" (Ford, 2016) to broaden perspectives about conceptualizing, planning, designing, funding, and building educational facilities that optimize both learner and instructor creativity. This dissertation marks the beginning of that scholarship.

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Appendix A: Invitation to Participate

Hello, Teachers!

You are invited to be a participant in research about creative teaching and the teaching environment. The study is broken into two phases: phase one is scheduled to begin in January 2016, and phase two in February.

Phase one will take 30 minutes of your time. The time will be used to administer the Abbreviated Torrance Test for Adults (ATTA), a 15-minute pencil to paper activity gauged to measure your creativity. The ATTA will be administered to several participants at the same time (in a common room at your school). As an incentive and "thank you"' for participating, you will receive a $20.00 gift card to Target. Based on the first phase of the study, some of the participants will be invited to continue to phase two.

Phase two will take an hour of your time. The time will be used to interview you individually, in your classroom. I'm interested in learning about your creative teaching experiences. Half of the interview will include walking around your school while we talk. You will receive another gift card of $100.00 for participating in phase two. Additionally, I will take your order for a beverage and a treat as a token of my appreciation. I know your time is valuable!

If you are a full-time teacher, have worked in your building for at least a year, and would like to participate, please share your interest with your administrator.

Appendix B: Invitation to Interview

Good morning!

I am not sure if you remember me, but last fall I visited your school during a staff meeting and invited several teachers to participate in a research study about creative teaching. You were one of the teachers who participated in taking the Abbreviated Torrance Test for Adults (a test designed to measure your Creative Index). Shortly after, I interviewed some of your colleagues as a pilot study, and the time has come to conduct the interviews that will be used for dissertation.

I am contacting you because you indicated interest in participating with the interview phase, and because your creativity scores fall within the range of "high" to "substantial." Your Principal has granted me permission to contact you for the purpose of continuing the study with [your school] and supports your decision to participate or not to participate. Involvement is minimal, requiring one hour of your time at your school. If you choose to participate, I have funding to pay you for your time in the form of a **$100 gift certificate** (Target, Amazon, etc.). The incentive will be presented to you at the time of interview.

I realize that this is very short notice at during a very busy season. I figured that contacting you in December may present more options to participate. I know that you are extremely busy, and that January might be even busier! Thus, I am open to scheduling a time for interview during winter recess, weekends, or any time that is convenient and easy for you to coordinate a meeting at school. School need not be in session, as the nature of this study is about the creative teacher and instructional experiences. I am hoping to have all interviews complete by the end of January, so more time can be devoted to a thorough analysis.

Please think it over and let me know if you would like to participate, and if so, when we can schedule an hour of your time!

Thank you very much, and I look forward to hearing from you.

[Researcher Name]

Cc – [Principal]

Appendix C: Consent Form 1

CONSENT FORM TO PARTICIPATE IN STUDY
[Researcher Name], University of Minnesota

You are invited to participate in a research study about creative teaching and teaching environments. You were selected as a participant because you are a teacher, and because you have worked at the sample school for at least a year.

Background Information

I am a doctoral candidate at the University of Minnesota at the College of Design. The purpose of my research is to know more about creativity and teaching. I'm especially interested in knowing how teachers connect their experiences of creative teaching to the place they work.

Procedures

If you agree to be in this study, we will be asked to complete *phase one* which involves taking an abbreviated version of the Torrance Test for Creative Thinking (TTCT). The test is called the Abbreviated Torrance Test for Adults (ATTA). It's a pencil to paper test designed to measure your Creative Index score (or CI). The test will take 30 minutes of your time and will be administered in a common gathering space at your school with several other participants. The tests will be collected and scored, a process that will take a couple weeks.

The goal of the test is to select creative teachers to participate in *phase two*, which involves a 60-minute interview. The interviews will be in your classroom but will also involve walking around the building. I will record the interviews using a portable device, so they can be transcribed later. Because we'll be walking around, I will also take photographs of the places we go on the walk. No images will be collected of participants, or school faculty, staff, and students.

You will be asked to consent to the procedures at the end of this form. You will also be asked to provide contact information should you be selected to participate in phase 2. This study is focused exclusively on your ideas and experiences as a teacher. Thus, this study will not solicit any inquires or information from others about your professional practices or work environment.

Risks and Benefits of Participating in the Study

The study poses minimal risks. The ATTA will ask you to write and draw your answers. The direct interviews will ask you to share your ideas and experiences. You may refuse to answer questions that may make you uncomfortable.

Compensation

This research has funding to support participant incentives. You will be compensated with a **$20.00** gift card for participating in phase one of this study (taking the ATTA). Teachers who participate in phase 2 (interviews) will receive an additional **$100.00** gift card.

Confidentiality

The ATTA text and interview answers, observations, photographs and notes will be kept confidential and will be securely stored in a locked office at the University of Minnesota. Anything stored on a computer will be password protected. No school or individual will be named on the interview or observation sheets, nor on any reports or presentations. Final reports and presentations will not include any information that would allow a participant to be identified. The ATTA will be scored by me, and will strictly remain confidential. Other research records will be kept in a secure, safe location and only I will have access to those materials. All data, records, and photographs collected during this study will be securely destroyed and shredded on or by December 31, 2017.

Voluntary Nature of the Study

All participation with this study is *voluntary*. The decision of whether or not to participate in the study will not affect your relationship with your employer (including staff and administration) or the University of Minnesota. If you decide to participate, you are welcome to refuse any answer or withdraw your participation at any time without affecting the aforementioned relationships.

Contacts and Questions

Please contact the me if you have questions or comments about the methods, observations, photographs, reports, or presentations associated with this study. Should you have questions for the supervising professor of this study, please contact Dr. Brad Hokanson at brad@umn.edu. We welcome any questions you may have now or later. If you have any questions or concerns of the study that you would like to discuss with someone other than myself or Dr. Hokanson, you are encouraged to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware Street SE, Minneapolis, MN 55455, or (612) 625-1650.

Please indicate your consent to the following by initialing your choice.

— I consent to participating in phase 1 and phase 2 of this study, allowing the researcher the authorship to use the information collected to support the intent of this research.
— If interviewed, I consent to the researcher collecting an audio recording of my interview.
— If interviewed, I consent to the researcher taking photographs of my classroom and other places that are toured during the interview.

Participant Info
You will be contacted by email or phone if you are selected to participate in the interviews.

Name _____
First *Last*

Signature _____ Date _____

E-mail _____

Phone_____

Indicate how you'd like to be contacted if selected for interview: O e-mail
O phone

Appendix D: Consent Form 2

RE-CONSENT FORM TO PARTICIPATE IN STUDY
[Researcher Name], University of Minnesota

You are invited to participate in a research study about creative teaching and teaching environments. You were selected as a participant because you are a teacher because you have worked at the sample school for at least a year, because you participated in phase 1 of this study, and because your scores from phase 1 identify your creativity level as "high" or "substantial."

Background Information

I am a doctoral candidate at the University of Minnesota at the College of Design. The purpose of my research is to know more about the creativity and teaching. I'm especially interested in knowing how teachers connect their experiences of creative teaching to their environment.

Procedures

As a reminder, *phase one* of this study involved taking an abbreviated version of the Torrance Test for Creative Thinking (TTCT). The test is called the Abbreviated Torrance Test for Adults (ATTA). It was a pencil to paper test designed to measure your Creative Index score (or CI). The goal of administering the test was to identify creative teachers to participate in the remaining portion of the study. *Phase two* involves a 60-minute interview. The first half of the interviews are conducted at a location of your choice in the school building, and the second half involve walking around the building. I will record the interviews using a portable device so they can be transcribed later. Photographic documentation will be used to document the places we go on the walk. No images will be collected of participants, or school faculty, staff, and students.

You consented to participate in this study in fall 2015. Over a year has passed and some minor details of this study have changed (i.e. incentives). Therefore, you are asked to re-consent to the procedures at the end of this form.

This study is focused exclusively on your ideas and experiences as a teacher. Thus, this study will not solicit any inquires or information from others about your professional practices or work environment.

Risks and Benefits of Participating in the Study

The study poses minimal risks. The ATTA asked you to write and draw your answers. The direct interviews will ask you to share your ideas and experiences. You may refuse to answer questions that may make you uncomfortable.

Compensation

This research has funding to support participant monetary incentives. In fall 2015, you were compensated with a **$20.00** gift card for participating in phase one of this study

(taking the ATTA). Phase two participants are compensated an additional **$100.00** gift card at the time of the interviews.

Confidentiality

The ATTA text and interview answers, observations, photographs and notes collected in fall 2015 remain confidential and are securely stored in a locked office at the University of Minnesota. Anything stored on a computer is password protected. No school or individual names are indicated on any reports or presentations. Final reports and presentations do not include any information that would allow a participant to be identified. The ATTA was scored by me, and has remained strictly confidential. Other research records collected in phase two will be kept in a secure, safe location and only I will have access to such materials. All data and records generated throughout this study will be handled with the same rigor for confidentiality. These protocols will remain in place until the study is complete, at which time all data, records, and photographs collected during this study will be securely destroyed and shredded on or by December 31, 2017.

Voluntary Nature of the Study

All participation with this study is *voluntary*. The decision of whether or not to participate in the study will not affect your relationship with your employer (including staff and administration) or the University of Minnesota. If you decide to participate, you are welcome to refuse any answer or withdraw your participation at any time without affecting the aforementioned relationships.

Contacts and Questions

Please contact the me if you have questions or comments about the methods, observations, photographs, reports, or presentations associated with this study. Should you have questions for the supervising professor of this study, please contact Dr. Brad Hokanson at brad@umn.edu. We welcome any questions you may have now or later. If you have any questions or concerns of the study that you would like to discuss with someone other than myself or Dr. Hokanson, you are encouraged to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware Street SE, Minneapolis, MN 55455, or (612) 625-1650.

Please indicate your re-consent to the following by initialing each of the following:

____ I ***re-consent*** to participating in this study, and to be interviewed for phase 2.
____ I ***re-consent*** to allowing the researcher the authorship to use the information collected to support the intent of this research.
____ I ***re-consent*** to the researcher collecting an audio recording of my interview.
____ I ***re-consent*** to the researcher taking photographs of my classroom and/or other places that are toured during the interview.

Please indicate receipt of compensation by initialing the following:

____ I have received compensation of $100 to participate in phase two of this study.

Participant Info

Name _____
First *Last*

Signature _____ Date _____

E-mail _____

Would you like to receive an email about the results of this study? O yes
O no

Appendix E: Pre-Interview Prompt

[read to participant]

As a reminder about who I am and what this study is about, I'll briefly re-introduce myself. I am a doctoral student at the University of Minnesota at the College of Design. The purpose of my research is to know more about creativity and teaching. I'm especially interested in knowing how teachers connect their experiences of creative teaching to the place they work.

Your score on the ATTA distinguished you as a creative teacher. Therefore, I'm looking forward to learning more about your teaching experiences in our interview today! As a reminder, the interview part of this study involves talking here in your classroom, and then talking while we walk around your school. I'll digitally record the audio of our conversation and transcribe it later. During the walk, we may mark places that I'll want to photograph afterwards.

To reiterate the terms of confidentiality, your responses may be referenced in my study, but your identity and the school's identity will remain confidential. Please let me know if you have any questions before we start, or if you would like to review the consent form you signed when you took the ATTA.

Appendix F: Interview Protocols

Part 1: Responsive Interviews (classroom)

1. What does creative teaching mean to you?
2. Tell me about a creative teaching moment or experience.
3. Describe an experience of feeling creatively limited when teaching.
4. Tell me about a creative lesson that other teachers have borrowed from you.
    a. What made it creative?
5. Describe the importance of the environment to doing your job in a creative way.

Part 2: Responsive Interviews (walking)

6. Show me a place in this school that you've experienced creative teaching, or a place that inspires you to teach in a creative way.
    a. *Activity: Go there and listen to what they say about it. What they say on the walk is as important as what they say at the place.*
    b. *Prompt: Ask them to talk about why they chose the place (place numbered sticker(s) when possible on the place or thing described and ask them to describe number [blank] identifies and why it is important).*
    c. *Follow-Up: If they do not have a place to share, ask them to share what kind of place would inspire them to teach in a creative way.*

7. Show me a place in this school that you've experienced feeling creatively limited as a teacher.
    a. *Activity: Go there and listen to what they say about it. What they say on the walk is as important as what they say at the place.*
    b. *Prompt: Ask them to talk about why they chose the place (place numbered sticker(s) when possible on the place or thing described and ask them to describe what number [blank] identifies and why it is important).*
    c. *Follow-Up: If they do not have a place to share, ask them if there is a place in the school from which they would not want to be assigned to teach.*

Appendix G: IRB Approval of Parent Study

Jody Lawrence <lawre393@umn.edu>

1509E78641 - PI Lawrence - IRB - Exempt Study Notification

irb@umn.edu <irb@umn.edu> Fri, Oct 30, 2015 at 4:09 PM
To: lawre393@umn.edu

TO : brad@umn.edu, lawre393@umn.edu,

The IRB: Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #2 SURVEYS/INTERVIEWS; STANDARDIZED EDUCATIONAL TESTS; OBSERVATION OF PUBLIC BEHAVIOR.

Study Number: 1509E78641

Principal Investigator: Jody Lawrence

Title(s):
Evaluating the Creative Expression of Elementary School Teachers in the Classroom: A Pilot Study

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This e-mail confirmation is your official University of Minnesota HRPP notification of exemption from full committee review. You will not receive a hard copy or letter.

This secure electronic notification between password protected authentications has been deemed by the University of Minnesota to constitute a legal signature.

The study number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

Research that involves observation can be approved under this category without obtaining consent.

SURVEY OR INTERVIEW RESEARCH APPROVED AS EXEMPT UNDER THIS CATEGORY IS LIMITED TO ADULT SUBJECTS.

This exemption is valid for five years from the date of this correspondence and will be filed inactive at that time. You will receive a notification prior to inactivation. If this research will extend beyond five years, you must submit a new application to the IRB before the study?s expiration date.

Upon receipt of this email, you may begin your research. If you have questions, please call the IRB office at (612) 626-5654.

You may go to the View Completed section of eResearch Central at http://eresearch.umn.edu/ to view further details on your study.

The IRB wishes you success with this research.

We value your feedback. We have created a short survey that will only take a couple of minutes to complete. The questions are basic, but your responses will provide us with insight regarding what we do well and areas that may need improvement. Thanks in advance for completing the survey. http://tinyurl.com/exempt-survey